CONGESTION MANAGEMENT

PROCESS Draft

Lubbock Metropolitan Planning Organization

In Cooperation with:

City of Lubbock

City of Wolfforth

Lubbock County

Texas Department of Transportation

Citibus

Prepared by:

LMPO and
City of Lubbock
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DRAFT

Approved by the Transportation Policy Committee ~~August 17, 2018~~

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I. Congestion Management Process (CMP) Regional Objectives

a. Overview

A Congestion Management Process (CMP) is required in metropolitan areas with where populations exceed 200,000 – these metropolitan areas are known as Transportation Management Areas (TMAs). The rule provides for effective management of new and existing transportation facilities through the use of travel demand reduction and operational management strategies.

According to Congestion Management Process: A Guidebook published by the Federal Highway Administration, the CMP is intended to be an on-going process, fully integrated into the metropolitan transportation planning process. Previous law (ISTEA 1991) defined the Congestion Management System (CMS) to be a tool to augment and support decision making in the overall metropolitan transportation planning process. The CMP, as opposed to the CMS, provides flexibility to address results of performance measures, community concerns, objectives and goals of local government, and new information on congestion issues.

The Lubbock Metropolitan Area is located between two major east-west interstates. IH-27 connects with IH-40 120 miles to the north and US87 and US84 connect to IH-20 120 miles to the south. Major locations in the metropolitan area can be accessed by Loop 289 or Marsha Sharp Freeway that connects to major arterial roadways.

There are 26 truck freight carriers located in the area. They include inter- and intra-state services. Lubbock provides regional warehousing and distribution for truck freight due to convenient location and access to major roadways.

The City of Lubbock is served by Citibus, a public transportation service that has fixed routes to all major retail, medical, educational, and employment areas within the city limits. Greyhound Bus provides service for long distance travel.

The Lubbock Metropolitan Planning Organization (LMPO) views congestion management in the context of the overall transportation planning process. There are diverse activities that contribute to Lubbock Metropolitan Area congestion such as growth in area businesses, population increases due to available jobs, housing development in the southwest portion, and increased student enrollment at Texas Tech University. Based on information provided by Texas Tech University (TTU) more than 38,000 students were enrolled in 2019 and student enrollment is targeted to reach over 40,000 in upcoming years.

b. Goals

LMPO has established four primary goals for the CMP that ensure that the Lubbock Metropolitan Area may adhere to the guidelines set forth in the Federal Fast Act. The goals consist of reduced congestion, enhancing safety, expanding economic opportunity, and increasing the value of transportation assets.

1. The first goal is to reduce the level of traffic congestion by designing and developing mobility projects within the metropolitan area. Some larger projects completed in the last ten years include completion of the Marsha Sharp Freeway, Loop 289 main lane widening improvements, various arterial interchange improvements, and continued expansion of the City of Lubbock's grid street system. An outer route feasibility study was completed, as well. Funding for the outer route (Loop 88) preliminary phases have been identified and construction is scheduled beginning in Year 2022.

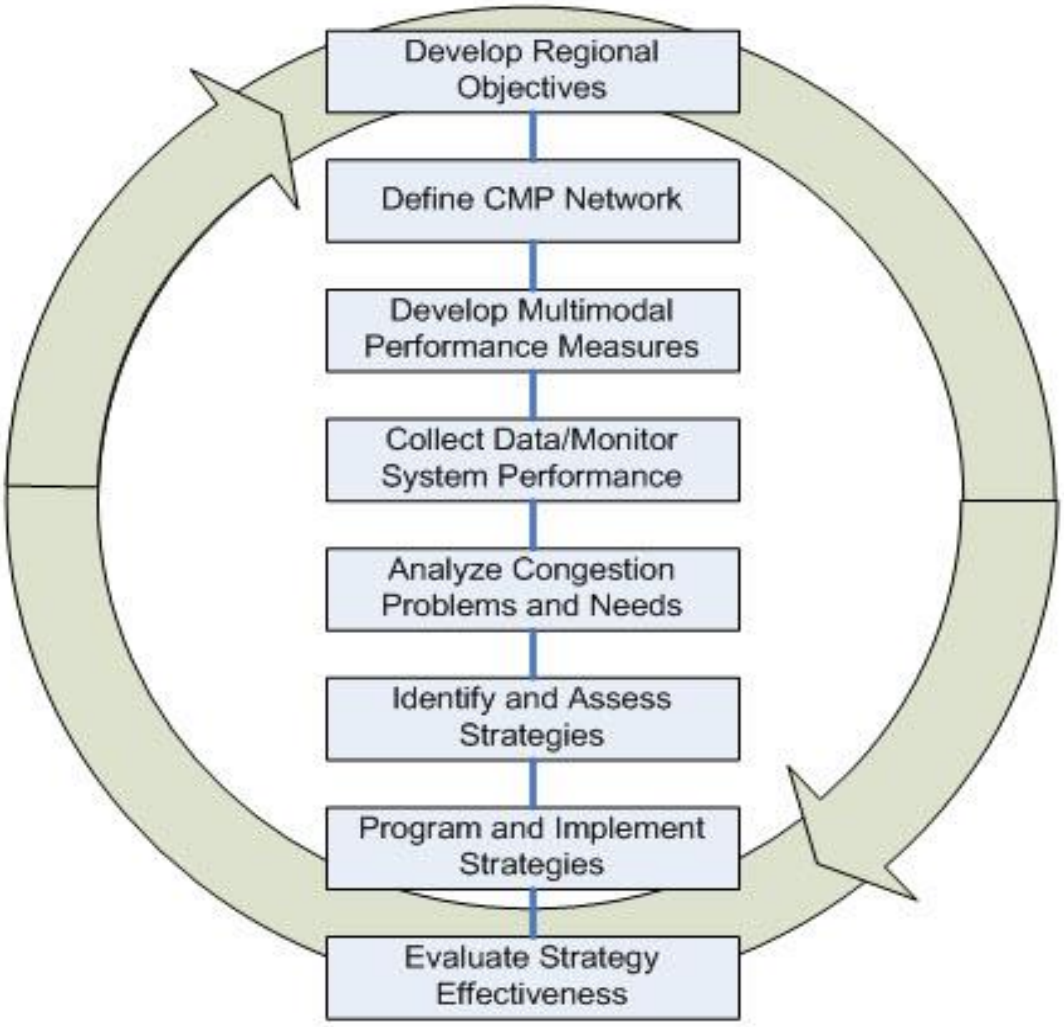
2. The second goal is to enhance safety through construction and operational improvements utilizing TxDOT's Hazard Elimination Program (HES), Intelligent Transportation System (ITS) programs, and providing grade separation projects at key intersections. HES projects include drainage structure reconfiguration, roadway shoulder texturing, and upgrading signs and roadway striping. Current ITS projects include dynamic message signs (DMSs), closed circuit television cameras, environmental sensor stations, and traffic signals along major thoroughfares.

3. The third goal is to enhance and expand economic opportunity. There are, currently, proposed projects within the metropolitan area that will promote economic opportunity. Examples include: seven phased Loop 88 projects from US 62/82 to US 87, Interchange improvements to US 84 and SE Loop 289, and City of Lubbock projects such as Upland Ave from 66th to 114th Street and 114th Street from Quaker to Indiana. These projects are being developed in conjunction with ongoing and proposed commercial and residential development.

4. The fourth goal is to increase the value of transportation assets. TxDOT manages programs for erosion control, storm drainage, and maintenance of vegetation that includes wildflowers. The City of Lubbock uses street maintenance programs, neighborhood plans, development codes, and permitting to maintain upkeep to its roadway system. LMPO and its member agencies utilize community involvement in the development of roadway, multi-modal, and public transportation projects. The totality of these measures and other smaller measures help to maintain the value of Lubbock Metropolitan Area transportation assets.

c. Congestion Management Process Elements

Based on FHWA's Congestion Management Process Guidebook and recommendations from the 2016 joint FHWA/FTA TMA Certification Review document, an effective regional CMP should include action items tied to goals. Depicted below, are eight (8) action items taken from the FHWA CMP Guidebook:



The eight suggested action items of FHWA from the previous page can be linked to current Lubbock Metropolitan Area congestion management activities and the 4 goals of this CMP document. The eight action items are described in more detail within the numbered chapters that correspond with the action items listed on the previous illustration. The Table of Contents to this document correspond to the eight action items.

1. **Develop Regional Objectives for Congestion Management** – It is important to define goals and objectives for congestion management that will achieve desired results for the Lubbock Metropolitan Area. The four goals of this document will aid in development of the Metropolitan Plan (MTP), the Transportation Improvement Program (TIP), and the State of Texas mandated 10 Year Plan.

2. **Define CMP Network** – LMPO and the Transportation Policy Committee, with assistance from the Technical Advisory Committee and local agencies, defines the geographic area and the roadway network. This document also contains the Transportation Analysis Zone (TAZ) map for the Lubbock Transportation Demand Model (TDM). The TAZ map covers Lubbock County entirely and extends beyond the Metropolitan Area Boundary.

3. **Develop Multimodal Performance Measures** – MAP 21 and the FAST Act require that states and MPOs develop performance measures to 1) assess congestion problems, and 2) assess the degree of success with mitigation measures.

4. **Collect Data and Monitor System Performance** – Collecting data to monitor system performance requires a large amount of resources and staff time. Once data is collected, LMPO staff utilizes state-of-the-art tools to provide detailed analyses.

5. **Analyze Congestion Problems and Needs** – LMPO staff uses a number of data sources for analyses such as the census, travel demand model, and Geographic Information System (GIS). The data is next translated into measures of performance (e.g. projected roadway volumes, trip types, corridor efficacy, etc.). Because the data is utilized for roadway analysis, it is also reviewed by both the Technical Advisory and Transportation Policy Committees for any impact to project programming.

6. **Identify and Assess Strategies** – LMPO working with local agency partners develops strategies for congestion management. Strategies may be included in MTP updates, corridor studies, or project studies.

7. **Program and Implement Strategies** – These strategies involve determining funding sources, prioritizing actions, publishing in the MTP and TIP, and development of programs or infrastructure.

8. **Evaluate Strategy Effectiveness** – Per item 4 above, performance measures have built-in results targets, or bench marks, to evaluate transportation efficacy. LMPO will be executing its congestion management process in a continuous, cooperative, and comprehensive manner.

It is the intention of LMPO to work with the local entities to improve efficiency by adopting Transportation Demand Management (TDM) and Transportation System Management (TSM) strategies to reduce Single Occupancy Vehicle (SOV) travel. Congestion management goals have been included in the project selection matrix contained within the Decision Lens project selection tool. Decision Lens is described in Chapter 7 of this document.

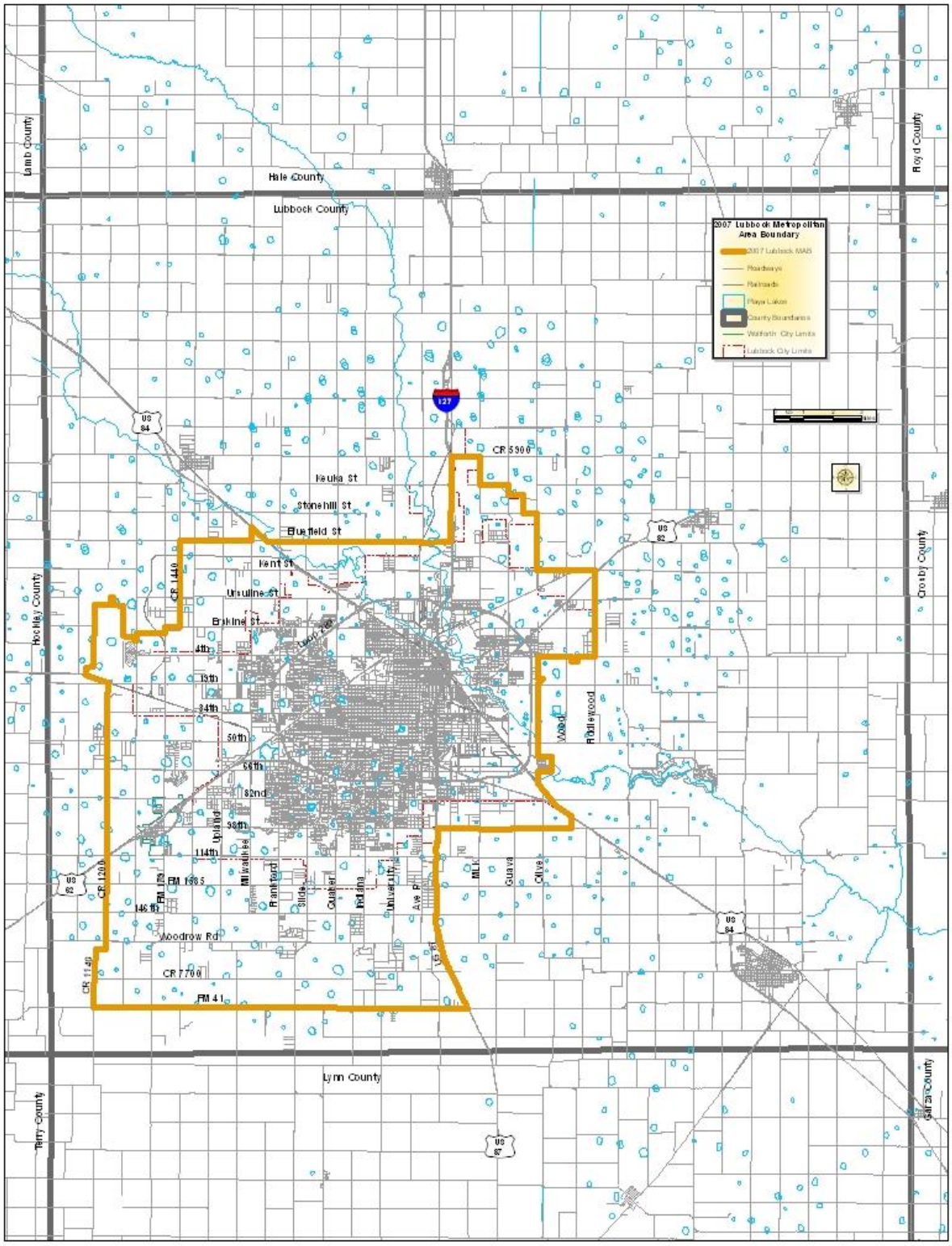
II. Congestion Management Process Network

Defining the Lubbock CMP network involves two parts of the overall system: 1) The Metropolitan Area Boundary (MAB) depicts the geographical extent of the study area. 2) System Components identifies and depicts local roadways and their hierarchies. The hierarchy, or functional classification determines items such as roadway dimensions, expected volume of trips, a rough estimate of costs, and what amount of funding is necessary for development.

a. Geographic Area

LMPO utilizes the established Metropolitan Area Boundary (MAB) boundary as the Lubbock Congestion Management Process Area. The current MAB/CMP Area is approximately 232 square miles in size and is depicted on the next page as. The Lubbock MAB was last revised in 2007.

Congestion Management System Boundary



b. Roadway Functional Classification and System Components

The average elevation for the Lubbock Metropolitan Area is 3,268 feet above sea-level. The area is situated atop the “caprock” which is actually the largest plateau in the United States. The topography is flat. Local roadways provide vehicular flow capacity as well as serving as drainage conduits for the many playa lakes. The Lubbock area grid street system is ideal for the flat topography.

The Lubbock Metropolitan Area’s grid roadway system contains arterial roadways spaced one mile east to west and one mile north to south in a one mile square. Collector streets are spaced at half mile intervals, within the arterial one mile square. Local streets all have links to the collector systems within the arterial grid-square pattern.

Metropolitan area roadways are made up of functional systems identified in the Highway Functional Classification Concepts, Criteria and Procedures manual published by FHWA. The four (4) functional systems are principal arterials, minor arterials, collectors, and local streets.

TxDOT provides for seven (7) functional classifications. The additional 3 classifications include interstate highways, freeways, and minor arterials. In the spirit of continuous, cooperative, and comprehensive transportation planning, LMPO utilizes TxDOT’s Functional Classification System. The definitions for the seven functional systems are listed below:

Functional Classification Characteristics (Texas Department of Transportation)

Seven Functional Classification categories

1. Interstate

    - Part of the Interstate Highway System
    - Controlled Access – intersections are grade separated, access to interstate main lanes is permitted at entrance and exit ramps only
    - Highest level of functional classification
    - Mobility is sole purpose
    - Trip lengths are inter-state
    - Interstate commerce is served

2. Other freeways and expressways

    - Completely access-controlled
    - Not part of the Interstate Highway System
    - Trips are shorter in length than interstate travel

3. Principal Arterials

- Mobility is primary purpose
- In large urban areas they serve through traffic
- No controlled access
- Higher volumes of traffic
- Longer trip lengths
- Trips entering and leaving the urban area
- Through trips bypassing the CBD
- Provides intercity bus trips
- In large urban areas four or more lanes that may be divided
- Not classified as principal arterial if connecting to a lower FC

4. Minor Arterials

- Lower level of mobility
- More direct access to adjacent land
- Shorter distance trips
- Smaller geographic area served
- May carry local bus trips

5. Major Collector

- Shorter in distance than Minor Arterials
- More integrated into neighborhoods than Minor Arterials
- Facilities must be rated at major collector or above to receive federal or State funding

6. Minor Collector

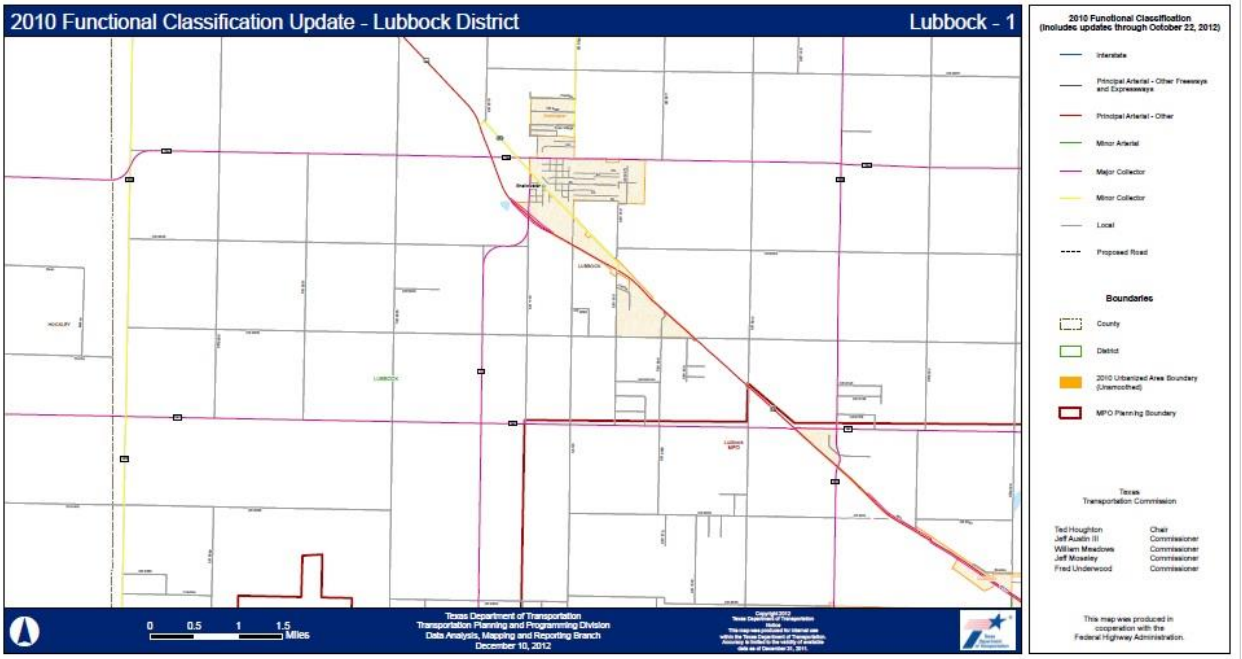
- Not funded by federal or State programs
- Usually penetrating neighborhoods
- May serve residential areas directly

7. Local

- Commercial land uses have restricted heavy truck usage
- Serves residential areas
- Urban streets not classified under previous classifications

TxDOT publishes the State's inventory of functionally classed roadways. For the purpose of this document, Lubbock's current Functional Classifications (Year 2010) are depicted in **Figure IIb (1-6)**. The Functional Classification system is updated with every new Federal Census data release. LMPO staff has provided TxDOT and FHWA with revisions from the previous census. Lubbock's revisions will be published along with other MPOs and the rest of the State when all state-wide revisions are complete. Lubbock's Draft Functional Classification revisions are also depicted.

Figure IIb. Extant Roadway Functional Classifications (1 – 6)



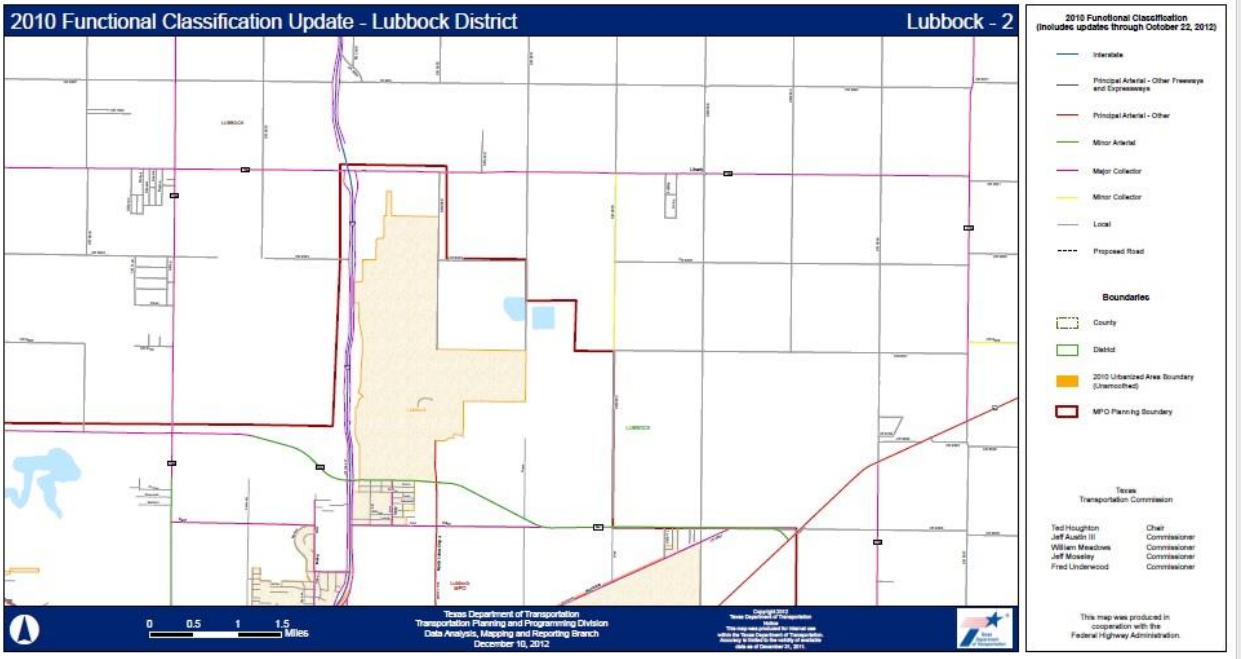


Figure IIb. Extant Roadway Functional Classifications (continued)

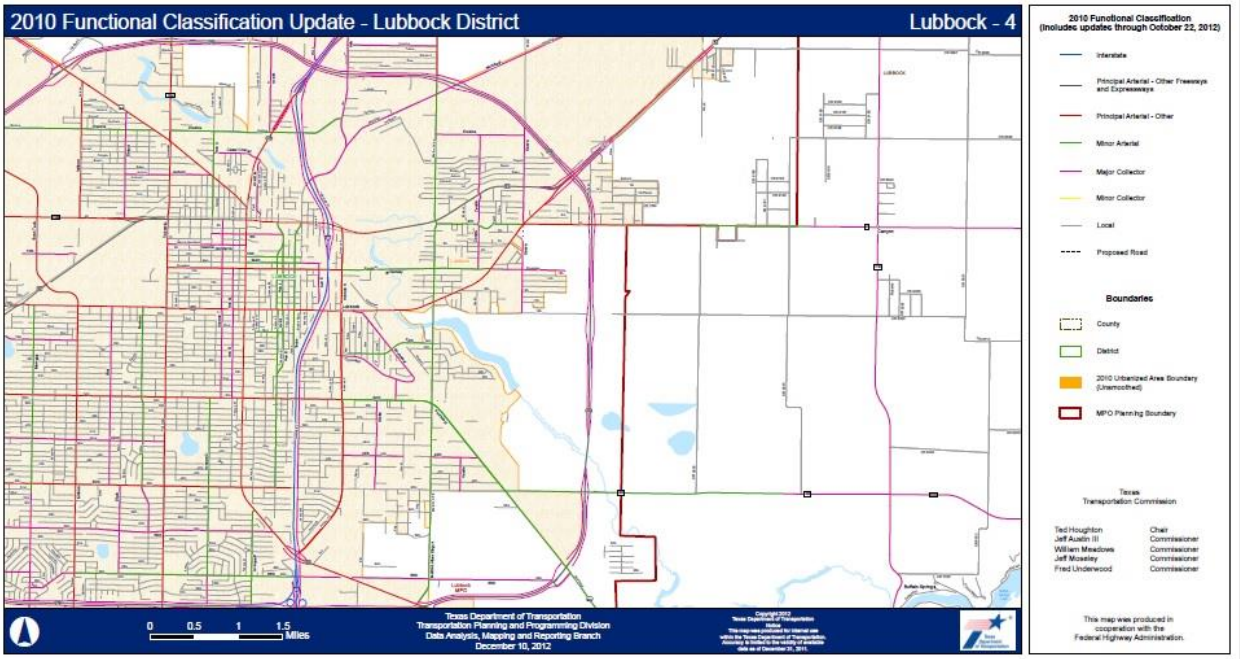
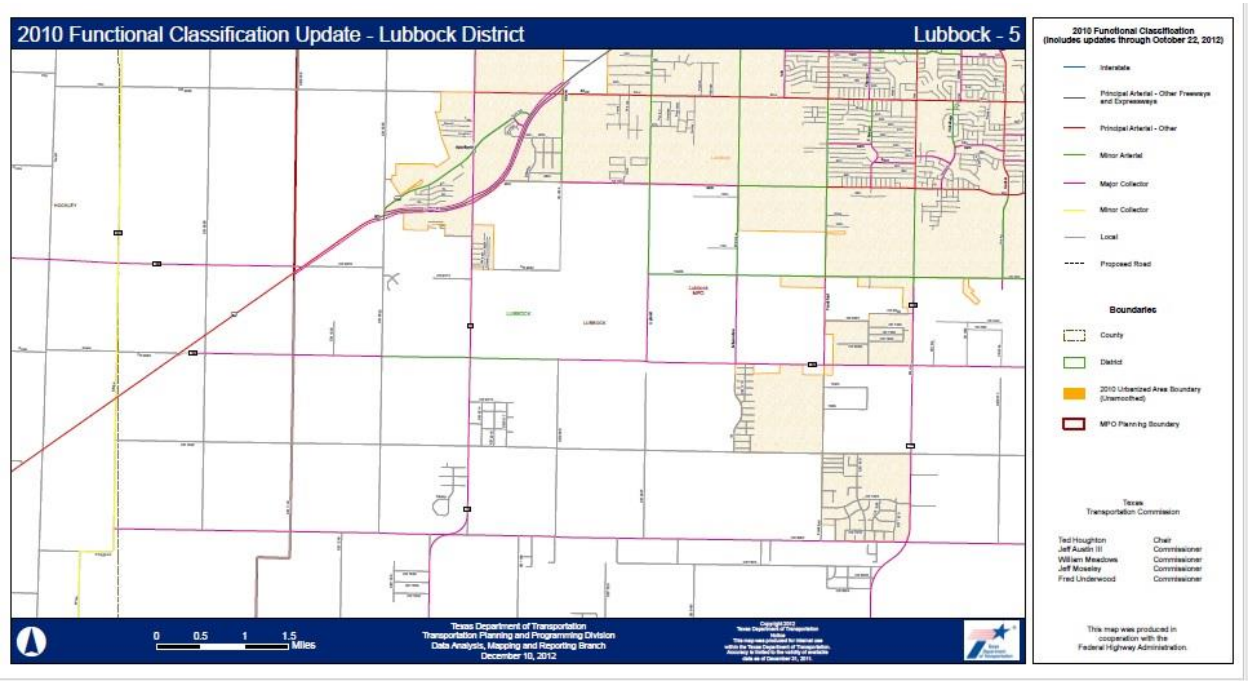
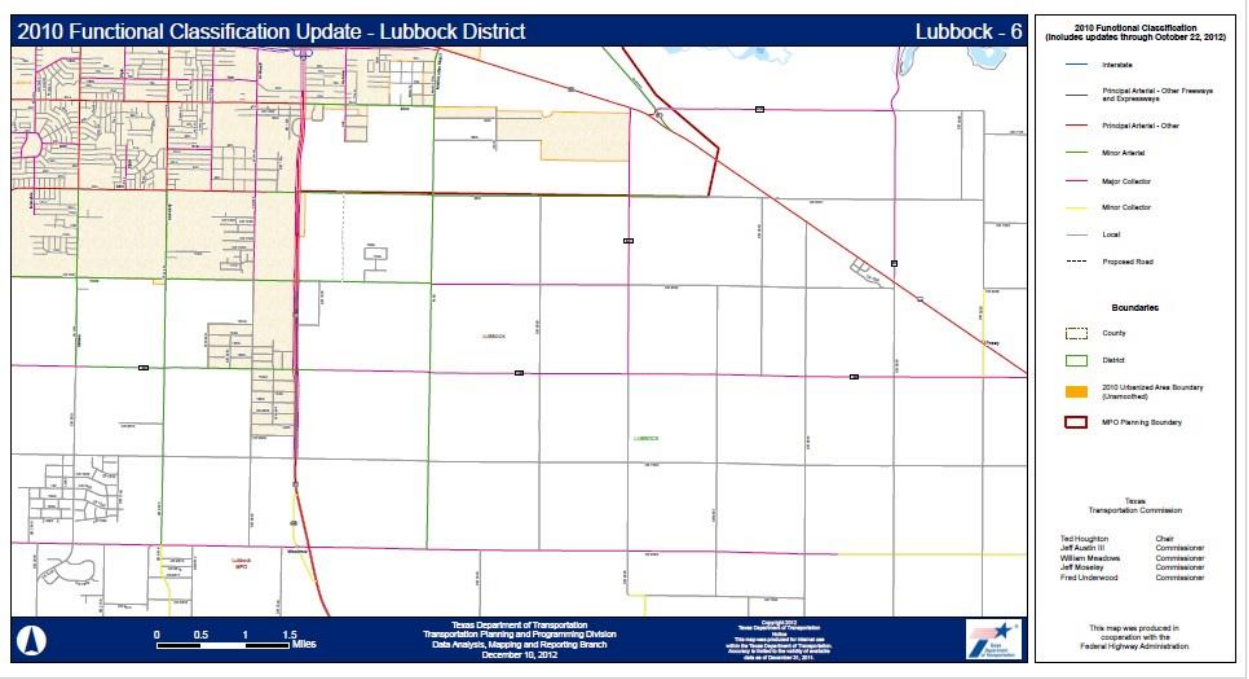


Figure IIb. Extant Roadway Functional Classifications (continued)





Revised Lubbock Area Roadway Functional Classifications

With each new decennial census release, MPOs are required to revise roadway functional classifications within the metropolitan area to account for new facilities and to match existing uses with federal and state classification guidelines. LMPO submitted the following 2010 census revisions to TxDOT and FHWA.

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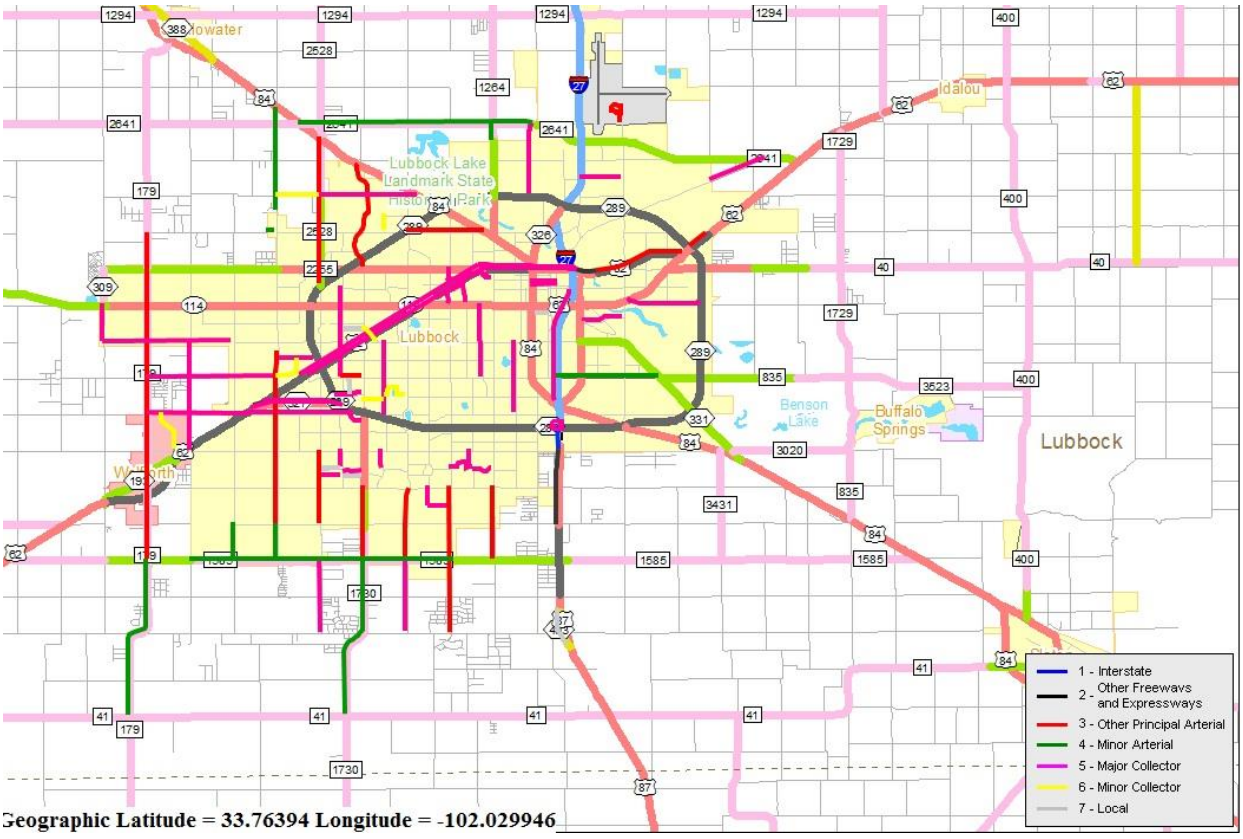


III. Multimodal Performance Measures

a. Public Transit

The City of Lubbock has a contract with RATP Dev USA to provide public transportation service within the City Limits. The transportation services that City of Lubbock's Citibus offers include:

Fixed Route
CitiAccess (paratransit)
NiteRide (late night, shared ride service)
Texas Tech University (on- and off-campus routes)
Game-day shuttles for home football games
Special services
Greyhound Bus freight and ticketing agent

Citibus operations meet goals of this congestion management document. 1) Citibus provides multi-passenger service and reduces traffic. 2) By reducing the number of single-occupancy-vehicles, roadway operations are improved. 3) By providing passenger service to job sites, economic opportunity is enhanced. 4) Citibus provides bicycle rider and handicapped access to passengers thereby making more modes of transportation available within the existing roadway network.

Citibus is the regional contractor for the Medicaid non-emergency medical transportation program, which generated almost 26,000 trips in FY 2010. Citibus operates a fleet of 60 buses, four trolleys, and 32 paratransit vans. All revenue vehicles are wheelchair accessible. The agency also operates hybrid public transit vehicles and in 2019 received delivery of two all-electric buses and installed two charging stations for those buses. Citibus also operates various support vehicles, including four supervisors' vans that are wheelchair accessible.

Citibus' fixed route service operates Monday-Saturday, from approximately 5:45 a.m. to 7:45 p.m. During the week, the routes operate on thirty-minute headways during morning and afternoon peaks, and hourly during mid-day; Saturday service is hourly all day. The base fare for the fixed route service is $1.75. An all-day pass, which offers unlimited trips, is $3.50. Citibus offers discounted fares for children and elderly. Passengers who are ADA-qualified for the paratransit service may ride the fixed routes free of charge. In addition, a variety of passes are offered, from a $14.50 weekly pass, to monthly passes, and semester-long passes for students, including university students. Two routes, which serve areas of high numbers of entry-level jobs, are funded through Jobs Access Reverse Commute funds.

CitiAccess, Citibus' paratransit service, operates the same days and hours as the fixed routes. Base fares on CitiAccess are $3.50 per trip, with a separate fare structure for specific destinations that are outside of Citibus' service area. CitiAccess passengers are required to meet ADA guidelines and must complete an assessment prior to becoming certified for the service. Citibus' NiteRide service is a shared-ride service that utilizes CitiAccess vehicles. NiteRide provides shared-ride trips from approximately 6:30 to 10:30 pm. NiteRide fares are $4.50 and trips must be scheduled in advance, a higher fare is

charged for same day service. The NiteRide service is currently funded through New Freedom funds.

Citibus operates service for Texas Tech University, including routes both on- and off-campus. This service is funded through a dedicated student transportation fee; no additional fares are required to ride the service and it is open to the general public. At the current time, the Texas Tech service includes three routes that operate on campus and six that serve off-campus housing areas; additional services are a late-night on-demand service that operates until 1:15 a.m and the Tech S Bus Safe Ride that provides service from various student housing communities to the Depot District and Broadway. The S Bus operates Thursday, Friday and Saturday from 9:00 p.m. to approximately 3:00 a.m. Citibus staff works with the Student Government Association to design the route service. Texas Tech students who have a current ID can ride any of the fixed routes at no charge.

Citibus provides game-day shuttles for Tech football games. These buses are funded in varying ways, including sponsorships, fares, and by Texas Tech University.

Finally, Citibus operates limited charter, or special service. Under Federal guidelines, the only special services that Citibus provides are those that the other private bus company cannot perform. The numbers of passengers carried by this part of Citibus' service varies widely from year to year.

Citibus Facilities

Citibus operates the Downtown Transfer Plaza (DTP), where the majority of transfers to other routes are made. This facility, which occupies an entire block, spaces for twelve buses to park and a facility where passengers can wait, purchase tickets or passes, etc. In August 2008, Citibus contracted to become the local passenger, freight, and ticketing agent for Greyhound Lines and began operating the DTP as a shared facility, requiring operation approximately 20 hours per day, seven days per week. Enhanced intercity and fixed route connectivity and feeder service increased business volume within the city and the region, which made additional renovations and expansion imperative. Citibus has completed the first two of four phases to renovate the lobby and freight areas, expanding the east end to include a business center and making repairs to the exterior site. The estimated cost to complete the project is $22.6 million.

Fixed Route Review

In the coming years as funding becomes available, Citibus' planning staff will attempt to undertake a comprehensive route evaluation, which will include boarding and alighting surveys, service assessments, and other processes designed to gain insight into consumer opinions of the service and ways to improve efficiency and effectiveness. The process will yield a revised route service plan that will correlate to the amount of annual funding available.

Citibus' Safety, Security, and Emergency Preparedness Plan

Citibus has had an adopted Safety, Security, and Emergency Preparedness Plan since 2005. The plan includes a description of the transit system; a description of the management of the security plan, including specific roles and responsibilities; threat and vulnerability identifications and assessments; and an annual program of work. The plan is updated annually.

Additionally, Citibus has produced an employee handbook that was designed to be used by all employees, not just those with direct safety- or security-related job duties. The handbook includes information on security incident reporting, general security policies and procedures, personal safety and security tips, and victim response information. In addition, it includes examples of forms that would be required in the event of an incident: security incident form, lost and found report form, and complaint form. Citibus also produced in-bus signage to educate passengers on the importance of reporting any type of suspicious packages or activities.

Citibus has faced budget crises for the past several years. Due to Federal regulations that prohibit urbanized areas with populations in excess of 200,000 from using their Federal funds for operating assistance, Citibus is faced with funding shortages. The City of Lubbock has been able to provide some additional funding assistance, but the current funding levels still do not permit Citibus to plan or implement additional service. As a result, newly-developed areas of the city do not have transit service. Citibus continues to seek remedies to this problem, on both state and Federal levels.

b. Freight Mobility

Railroads

Rail freight activity in the Lubbock Metropolitan Area is an essential component to a robust economy. By safely connecting industries and delivering goods without congesting highways, freight rail enhances and expands the local economy.

Three freight rail companies currently serve the Lubbock area. 1) The Burlington Northern, Santa Fe Railway (BNSF) (formerly the Atchison, Topeka and Santa Fe Railway), 2) the Lubbock and Western Railway (LBWR - formerly West Texas & Lubbock Railway and before that Seagraves, Whiteface and Lubbock Railway), and 3) the Plainsman Switching Company (PSC). These three freight rail companies operate lines that pass through or terminate in Lubbock.

BNSF is considered a Class I railroad as defined by the Interstate Commerce Commission to be a railroad that exceeds $96.1 million or more in operating revenues. BNSF controls four lines which run along U.S. 84 both Northwest and Southeast, along I.H. 27 to the North, and to the Northeast along U.S. 62/82. BNSF currently operates 14 trains per day through the Lubbock area.

Lubbock and Western Railway (LBWR) is a 144-mile Class III railroad in two segments operating from Lubbock to Seagraves and Whiteface, Texas and from Plainview to Dimmit, Texas. LBWR carries on average approximately 17,000 carloads of fracking sand, chemicals, fertilizer, grain, animal feed, and oil per year. LBWR interchanges with

BNSF and Union Pacific (UP). UP has the ability to interchange Class I (BNSF) freight rail traffic with Class III carriers (e.g. PSC and LBWR).

The Plainsman Switching Company (PSC) is locally owned and operated by PYCO Industries, which has a 60 year history of producing cottonseed. Since acquiring its rolling stock and 18 miles of railroad in 2007, PSC has restored confidence in rail service in Lubbock, attracting new rail-served businesses to the area. The following list show goods and products transported through Plainsman Switching Company's facilities:

Lubbock Rail Port

The Lubbock Rail Port, a 526 acre tract located five miles north of the Lubbock Preston Smith International Airport, provides companies with convenient access to the airport, IH-27, and the Burlington Northern Santa Fe (BNSF) rail system. The rail port establishes three new rail spurs adjacent to two existing rail spurs and extends one of the existing to the northernmost boundary of the Lubbock Rail Port. One short-line RR and BNSF link

the Lubbock Metropolitan Area to other metropolitan areas of the Central and Western United States.

Since the rail port was developed, four companies have added a combined 80 new full-time jobs and almost $30 million in private investment.

Trucking

The Lubbock Economic Development Alliance (LEDA), in addition to the Lubbock Rail Port, owns and operates the Lubbock Business Park, a 586-acre tract of land located off of Interstate 27, approximately one-mile south of Lubbock Preston Smith International Airport. Currently, eight businesses reside in the park with $25 million committed to additional public infrastructure. According to LEDA, every $1 of public money spent is matched by $5.21 in private investment.

Because of their size and scale, rail, truck, and multimodal freight facilities need planning to minimize conflict with other modes of transportation and to foster safety and efficiency.

Freight Studies

In September of 2009, the Transportation Policy Committee was briefed on the West Texas Rail Study completed by the Texas Department of Transportation. Three of the TxDOT Districts in the region were included in the Study and they were Lubbock, Amarillo, and Midland/Odessa. The Studies looked at freight movements in the area and any bottlenecks that could use improvements. Phase one was getting an inventory of existing facilities to determine what freight movements were taking place and projecting out to 2025, including any potential bottlenecks or impediments for that time frame. Phase 2 determined alternatives and solutions for those impediments done with alternative analysis and developing a very preliminary plan with an economic analysis of each so they could rise to a level of priority with a cost benefit ratio.

The objective of the West Texas Rail Feasibility Study was to help the Texas Department of transportation(TxDOT) determine the feasibility of developing a north-south rail linkage between Seagraves, Texas and the U.S.-Mexican border at Del Rio or Eagle Pass,Texas. Through analysis of rail corridor alternatives and improvement options a strategy was

developed to help guide TxDOT, the Ports-to-Plains (P2P) Alliance, and other partners toward corridor development, including the next steps of an environmental study, preliminary engineering, and financial partnership. To that end, *the West Texas Rail Feasibility Study* activities were oriented to answer the following questions:

- If a new north-south rail line is constructed, who will use the rail line?
- What would construction, maintenance and operations costs be for the rail line?
- What would be the economic benefits of such a line?
- Would there be sufficient freight revenues to cover operating and construction costs?

The results of the benefit-cost and rail revenue analyses for a potential West Texas Rail Corridor indicated the maximum benefit-cost ratio of 0.42. A benefit-cost of 1.0, or better is desired to advance projects. Additionally, in order to —break-even from a self-supported financial perspective, $4.75 million tons would need to be transported on the rail corridor, annually. These numbers represent a significant shortfall in benefits to justify a $1 billion investment.

An inventory was done of all the railroads in the area, primarily the UP and BNSF as Class 1 railroads with short lines and made a model of the railroads. It was determined that three grade separations for Lubbock were recommended, U.S. 70 in Farwell, University Avenue in Lubbock, and U.S. 70 in Muleshoe. As part of the Ports-to-Plains Corridor some improvements are already being made in Dalhart and Dumas which were included in the plan for the Amarillo District. No recommendations were made for rail.

LMPO staff is currently participating in TxDOT sponsored Truck Parking and Freight Infrastructure Design Considerations workshops. The workshops seek to improve freight movement efficiency and safety and is soliciting input from freight shippers, carriers, facility operators, and the public. Costs and benefits will be ascertained during the input solicitation phase. LMPO staff will use TxDOT information in developing long and short range transportation plans.

Hazardous Materials Commodity Flow Study: Roadways in Texas (HMCFS)

A hazardous materials commodity flow study was conducted for Lubbock County, Texas, from February through September 2011. The project included a general evaluation of hazardous materials transport via roadway, railway and pipelines. The project was funded through the U.S. Department of Transportation (U.S. DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Hazardous Materials Emergency Preparedness (HMEP) Grant Program. Funding was administered by the Texas Division of Emergency Management (TDEM). Texas Transportation Institute (TTI) coordinated the study. Grant match funding was provided through in-kind hours coordinated by the Lubbock County Local Emergency Planning Committee (LEPC). The Lubbock MPO staff are members of the LEPC.

The purpose of the study was to identify hazardous materials transportation in the Lubbock County area by HazMat class, division, special hazards, and transport vehicle types. HMCFS information can be used for many emergency and community planning applications. A HMCFS is often used as an information source for a community's Emergency Operations Plan (EOP), which is required under federal homeland security programs. It can also be used to educate the public about risks, help guide incident response training activities, identify risk hotspots, evaluate equipment and supplies needs, develop warning systems, locate and schedule personnel and equipment, or designate HazMat routes. A HMCFS can also be used to support comprehensive community planning (transportation, emergency services, land use, etc). The Lubbock MPO received copies of the HMCFS.

c. Pedestrian and Bicycle

LMPO addresses modes of travel outside single occupancy vehicle usage. Bikeways and pedestrian facilities are analyzed within LMPO's various planning processes. The Metropolitan Transportation Plan (MTP), Transportation Improvement Program (TIP), Ten Year Plan, Unified Planning Work Plan (UPWP), and the public participation events associated with these processes provide ample opportunity for bike and pedestrian facility development input. Since the publication of the 1994 Comprehensive Bicycle Master Plan, more than 14 miles of bike lanes and 72 miles of signed bike routes, 12 miles of paved trails and 15 miles of partially paved trails have been developed within the metropolitan area.

In 2018, LMPO contracted an update to the previous comprehensive bike plan. With feedback from LMPO agencies and the public, a vision and goal for the updated plan was:

> Walk and Bike Lubbock will create a unified and integrated regional bicycle and pedestrian system that connects people of all ages and abilities to desired destinations and encourages them to walk or bike for transportation or recreational purposes in a safe manner.

The Walk and Bike Lubbock Pedestrian and Bicycle Master Plan included methods for pedestrian facility development. Because the pedestrian focus created new criteria, this document demonstrates some of the activities used to develop the pedestrian portion of the Master Plan.

Pedestrian Focus Methodology

In order to identify pedestrian focus areas, the contractor's project team prioritized street segments based on the following variables:

Variable*	Criteria
Crash	More than four pedestrian crashes between 2012 and 2017
Transit	Transit route located along road segment
Schools	School or college located within ¼ mile
City Facilities	Library, parks and/or recreational centers located within ¼ mile

Households that do not own a car	Road segment intersects at least one blockgroup that is in the 95th percentile for the percent of households that do not own a car
Older adults	Road segment intersects at least one blockgroup that is in the 95th percentile for the percent of adults 60 and older

**Note that sidewalks are not used because a sidewalk layer is not available.*

Each criterion was mutually exclusive and for each criterion met, the road segment received one point. While the maximum potential total score was six, the highest total score received for any road segment was four. A higher score indicated road segments that have higher rates for pedestrian crashes and a higher potential for pedestrian traffic.

The project team created pedestrian zones, or areas in Lubbock that contained clusters of streets which received a score of three or four, and which logically followed neighborhood street patterns.

Local context was used to further tailor the pedestrian focus areas. Utilizing public comments about dangerous pedestrian locations and the need to ensure the focus areas unique settings, one pedestrian focus area and one future review area were added before the plan was finalized. A total of 25 pedestrian zones were identified.

To further narrow the location for the pedestrian focus areas, the bottom 5th percentile of the Lubbock median household income ($17,000) was used. The pedestrian zones that overlapped with bottom 5th percentile households were designated as pedestrian focus areas. A total of 13 pedestrian focus areas were identified in the plan. The areas of focus have recommended lists of improvements. The remaining 12 pedestrian zones were recommended for future review.

The information will be integrated into a GIS database and displayed on GIS maps. The Consultant will develop a pedestrian improvement toolbox that illustrates examples of the following as well as pedestrian infrastructure recommendations not limited to:

- Installation and widening of sidewalks
- Paved shoulders
- Mid-block pedestrian crossing improvements
- Advance signage
- Street connectivity and access management
- Signalization upgrades
- Traffic calming techniques
- ADA items

The final published Walk and Bike Lubbock Pedestrian and Bicycle Master Plan is available for public use at LMPO's website:

https://ci.lubbock.tx.us/pages/lubbock-metropolitan-planning-organization

IV. Data Collection and System Performance Monitoring

a. AADT

TxDOT submits statewide Annual Average Daily Traffic (AADT) data for local government agencies, the public, and federal agency consumption each year. AADT analysis is useful for impacts from anticipated projects, decline or growth in population, economic activity, or new traffic generators. The Statewide AADT web map is a cloud-based GIS application created by TxDOT-TPP and hosted by ESRI ArcGIS Online (AGO).The Lubbock District Office and LMPO have the opportunity to provide comment and provide additional information each year where needed.

Lubbock Metropolitan Area AADT data is used in local roadway planning and decision making. Roadway counts are considered, along with projected roadway trips, prior to assigning proposed project funds.

b. Texas Metropolitan Mobility Plan/Congestion Index Data

In 2004, the Governor's Office for the State of Texas, directed the state's eight Transportation Management Areas (TMAs – metropolitan areas with over 200,000 in population) to evaluate then current and future roadway congestion. The Texas Metropolitan Mobility Plan (TMMP) would identify statewide goals to improve traffic flow by using all modes of transportation. There were further revisions on a statewide basis to the TMMP in 2006. LMPO staff prepared the Texas State mandated TMMP document in 2004 and the follow-up 2006 revision.

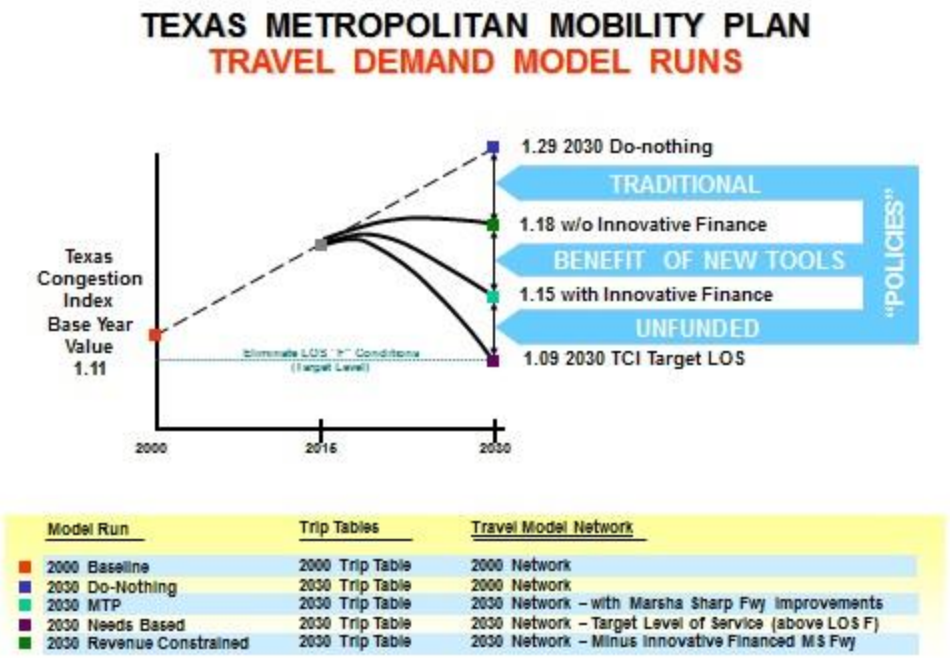
LMPO staff has included background on the development of the 2004 TMMP and 2006 revision because the amount of staff input into the process across the State of Texas provided transportation planners with a useful congestion tool still in use. TxDOT provided a Texas Congestion Index (TCI) to aid metropolitan areas in setting goals for congestion reduction. The TCI is based on the delay-time drivers experience. For example, a congestion index of 1.15 indicates that a peak-period trip would take no more than 15 percent longer than a non-peak trip, on average.

Some of the items included in the congestion index include:

- Travel time
- Person-miles moved
- Ton-miles moved
- Dollar value of delay
- Target speeds
- Travel delay
- Modes of travel

In 2006 TMMP, the base year TCI for the Lubbock Area was calibrated to 1.11. TxDOT, the Texas Transportation Institute (TTI), and LMPO staff then used a no-build Traffic Assignment for the 30 year planning horizon. The result was an 18 percent increase in the congestion index (TCI 1.29). Next, a scenario using the fiscally constrained MTP was assigned to the network. The result was a 4 percent increase in the congestion index

(1.15). Finally, a needs-based scenario where all Level of Service F was upgraded was assigned to the network. The congestion index decreased 2 percent (TCI 1.09).



The Texas Congestion Index planning tool is still in use. TCI is a good example of the dynamic nature of the congestion management process. This tool has been refined since the initial use in 2004-2006. Based on TTI's most recent Urban Mobility Scorecard and Report, from 2019, the Lubbock Metropolitan Area has no roadways listed on the Top 100 Most Congested Corridors in Texas. The following two pages are excerpts from the Urban Mobility Scorecard and Report of 2019. The TCI for each roadway segment is in the far right column.

2019 Rank -- All Delay	2019 Rank -- Truck Delay	TxDOT District	County	Road Name	From	To	Segment Length	Annual Delay per Mile (person-hours)	Annual Truck Delay per Mile (person-hours)	Texas Congestion Index
431	697	5	152 Lubbock	University Ave	1st St	SL 289 S	4.72	68,309	2,276	1.16
480	294	5	152 Lubbock	Slide Rd / FM 1730	SL 289 S	98th St	2.06	62,985	4,360	1.18
569	593	5	152 Lubbock	50th St	Indiana Ave	Marshal Formby Memorial Hwy / IH	2.47	54,801	2,614	1.17
622	717	5	152 Lubbock	19th St / SH 114	Upland Ave	SL 289 W	1.76	50,968	2,210	1.19
771	969	5	152 Lubbock	Slide Rd	Marsha Sharp Fwy / US 82	SL 289 S	2.01	41,778	1,563	1.12
863	976	5	152 Lubbock	50th St	SL 289 W	Indiana Ave	2.88	37,104	1,557	1.14
864	633	5	152 Lubbock	Quaker Ave	SL 289 S	114th St	2.83	37,036	2,486	1.13
869	902	5	152 Lubbock	34th St	Milwaukee Ave	Marshal Formby Memorial Hwy / IH	6.32	36,779	1,716	1.17
928	1127	5	152 Lubbock	Quaker Ave	Marsha Sharp Fwy / US 82	SL 289 S	3.08	33,573	1,291	1.14
949	612	5	152 Lubbock	University Ave	SL 289 S	98th St	1.66	32,668	2,542	1.12
956	1063	5	152 Lubbock	Indiana Ave	SL 289 S	114th St	2.65	32,329	1,395	1.14
962	1113	5	152 Lubbock	Indiana Ave	Marsha Sharp Fwy / US 82	SL 289 S	3.85	32,162	1,313	1.11
992	1227	5	152 Lubbock	Quaker Ave	Texas Tech Pkwy	Marsha Sharp Fwy / US 82	1.78	30,847	1,122	1.15
1017	327	5	152 Lubbock	19th St / US 62 / SH 114	Marsha Sharp Fwy / US 82	Marshal Formby Memorial Hwy / IH	3.44	29,897	4,017	1.12
1038	266	5	152 Lubbock	Avenue Q / US 84	Marsha Sharp Fwy / US 82	50th St	3.03	28,652	4,765	1.12
1072	1078	5	152 Lubbock	Frankford Ave	SS 327	98th St	2.32	26,923	1,372	1.10
1085	1038	5	152 Lubbock	4th St / FM 2255	SL 289 W	Marsha Sharp Fwy / US 82	3.10	26,557	1,445	1.09
1099	1138	5	152 Lubbock	82nd St	Frankford Ave	University Ave	4.00	26,020	1,264	1.10
1116	1320	5	152 Lubbock	Slide Rd	SL 289 NW	Marsha Sharp Fwy / US 82	2.20	24,983	989	1.14
1179	1359	5	152 Lubbock	82nd St	Dowden Rd / FM 179	Frankford Ave	4.00	21,585	937	1.15
1188	1105	5	152 Lubbock	19th St / SH 114	SL 289 W	Marsha Sharp Fwy / US 82	2.51	21,261	1,329	1.06
1346	1298	5	152 Lubbock	University Ave	SL 289 N	1st St	1.62	13,655	1,023	1.11
1386	667	5	152 Lubbock	Clovis Rd / US 84	N Quaker Ave	Marsha Sharp Fwy / US 82	3.65	11,192	2,365	1.09
1388	1612	5	152 Lubbock	82nd St	University Ave	Martin Luther King Jr Blvd	3.00	11,079	504	1.14
1401	446	5	152 Lubbock	4th St / FM 2255	Upland Ave / CR 1600	SL 289 W	2.57	10,435	3,232	1.09
1407	1772	5	152 Lubbock	Texas Tech Pkwy	SL 289 N	Marsha Sharp Fwy / US 82	2.12	10,115	243	1.16
1451	951	5	152 Lubbock	SL 289 S	Marsha Sharp Fwy / US 82 / US 62	University Ave	4.75	8,363	1,613	1.02
1477	1573	5	152 Lubbock	19th St / Levelland Hwy / SH 114	Quitsna Ave / Research Blvd / SS 3	Upland Ave	3.00	7,054	558	1.06
1478	1354	5	152 Lubbock	Martin Luther King Jr Blvd	SL 298 N	SL 298 S	5.94	7,040	945	1.08

1491	1131	5	152	Lubbock	SL 289 W	19th St / SH 114	Marsha Sharp Fwy / US 82 / US 62	1.75	6,659	1,282	1.02
1494	1058	5	152	Lubbock	Avenue Q / US 84	50th St	SL 289 S	2.54	6,534	1,402	1.08
1500	1767	5	152	Lubbock	Avenue Q / SH 326	Marshal Formby Memorial Hwy / IH	Clovis Rd / US 84	1.63	6,394	266	1.11
1514	1448	5	152	Lubbock	Marsha Sharp Fwy / US 82 / US 62	19th St / SH114	SL 289 W	2.83	6,019	770	1.02
1516	1090	5	152	Lubbock	Idalou Rd / US 62 / SH 114	Marshal Formby Memorial Hwy / IH	Parkway Dr / US 82	3.27	5,947	1,351	1.08
1522	1384	5	152	Lubbock	Marsha Sharp Fwy / US 82	Avenue Q / US 84	19th St / SH 114	2.92	5,682	898	1.01
1532	1088	5	152	Lubbock	E 34th St / Southeast Dr / SS 331	Marshal Formby Memorial Hwy / IH	SL 298 E	3.92	5,368	1,354	1.08
1540	1052	5	152	Lubbock	Marsha Sharp Fwy / US 82	Avenue Q / US 84	SL 289 E	3.86	5,240	1,419	1.03
1544	1364	5	152	Lubbock	Marshal Formby Memorial Hwy / IH	19th St / US 62 / SH 114	SL 289 S (66th St)	3.41	5,156	931	1.01
1547	1214	5	152	Lubbock	SL 289 S	University Ave	Marshal Formby Memorial Hwy / IH	1.51	5,056	1,137	1.02
1549	1180	5	152	Lubbock	E Salton Hwy / US 84	SL 289 S	Southeast Dr / SS 331	2.92	4,982	1,198	1.03
1600	1484	5	152	Lubbock	Marshal Formby Memorial Hwy / IH	SL 289 N (Mesa Rd)	19th St / US 62 / SH 114	2.89	3,493	697	1.01
1609	1265	5	152	Lubbock	E 50th St	Marshal Formby Memorial Hwy / IH	SL 289 E	3.28	3,277	1,069	1.09
1627	1570	5	152	Lubbock	Clovis Rd / US 84	FM 2528	N Quaker Ave	2.43	2,902	563	1.04
1630	1328	5	152	Lubbock	SL 289 S	Marshal Formby Memorial Hwy / IH	Southeast Dr / SS 331	3.17	2,879	979	1.02
1633	1586	5	152	Lubbock	US 62 / US 82	SL 289 W	Upland Ave	2.49	2,848	541	1.01
1641	1415	5	152	Lubbock	SL 289 W	19th St / SH 114	Clovis Rd / US 84	4.10	2,632	842	1.02
1667	1578	5	152	Lubbock	SL 289 N	Clovis Rd / US 84	Marshal Formby Memorial Hwy / IH	2.96	2,180	553	1.02
1677	1777	5	152	Lubbock	SS 327	Brownfield Hwy / US 82 / US 62	SL 289	2.11	1,988	234	1.02
1679	1652	5	152	Lubbock	Marshal Formby Memorial Hwy / IH	Regis St / FM 2641	SL 289	1.87	1,938	457	1.00
1694	1662	5	152	Lubbock	US 87	SL 289	114th St	2.64	1,624	440	1.01
1696	1688	5	152	Lubbock	Brownfield Hwy / US 82 / US 62	Upland Ave	Research Blvd	3.98	1,596	395	1.01
1726	1704	5	152	Lubbock	SL 289 E	Idalou Rd / US 62 / US 82 / SH 114	Southeast Dr / SS 331	4.52	1,115	376	1.01
1728	1734	5	152	Lubbock	SL 289 N	Marshal Formby Memorial Hwy / IH	Idalou Rd / US 62 / US 82 / SH 114	3.31	1,084	330	1.02
1760	1763	5	152	Lubbock	Idalou Rd / US 62 / US 82 / SH 114	FM 2641	SL 289 E	3.38	738	269	1.01
1826	1794	5	152	Lubbock	US 87	114th St	SL 493	2.41	240	209	1.00
1830	1821	5	152	Lubbock	Idalou Rd / US 62 / US 82 / SH 114	W 7th St	FM 2641	3.48	229	161	1.00
1845	1832	5	152	Lubbock	Marshal Formby Memorial Hwy / IH	Macalester Ave / FM 1729	Regis St / FM 2641	6.55	137	128	1.00

c. Congestion Analysis through Commercial Traffic Data

With the increasing availability and use of private-sector data across the U.S., the Texas Transportation Institute (TTI) reviewed various private data providers that provide some type of location-based services (LBS). Most data providers rely on either fixed sensors or probe-based vehicles or both to provide real-time traffic information. Some of these providers also enhance the data by performing quality assurance checks before distributing the data to subscribers.

TTI developed a list of opportunities for TxDOT to consider pertaining to future use of private sector data:

- Enhance traveler information in urban areas such as:
  - Travel Time information
  - Levels of congestion
  - Speed measurement
  - Alternate routes
- Provide traveler information where ITS deployment is not cost-effective
- Improve collected data on existing ITS coverages
- Develop a 511 system
- Reduce ITS costs by limiting the number of deployments

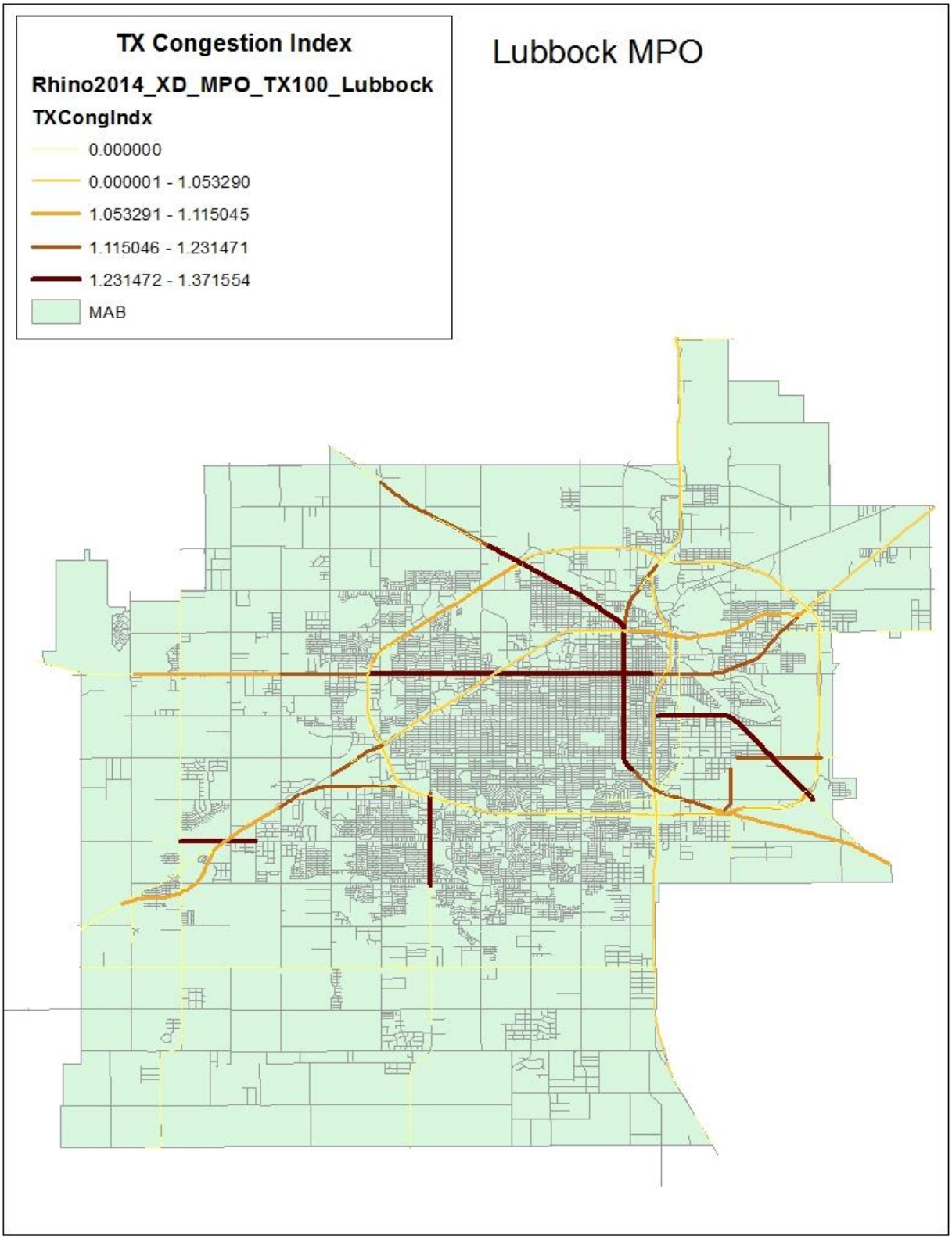
TTI concluded that purchasing private sector traffic data would be feasible. The Texas Transportation Commission concurred. LMPO has received Lubbock Metropolitan Area data purchased by TxDOT in the form of GIS shape and database files. In 2009, the first year of the Texas Congested Roadways study, there was little collected speed data (travel times) and speeds were estimated using traffic volume and number of roadway lanes. Since then, speed data has improved each year.

The first installment of Commercial Traffic Data received by LMPO staff was 2012 Roadway and Highway Network Inventory (RHiNo) traffic forecast data. The report indicated a Compound Annual Growth Rate (CAGR) of 1.7% for Loop 289 and along US 84.

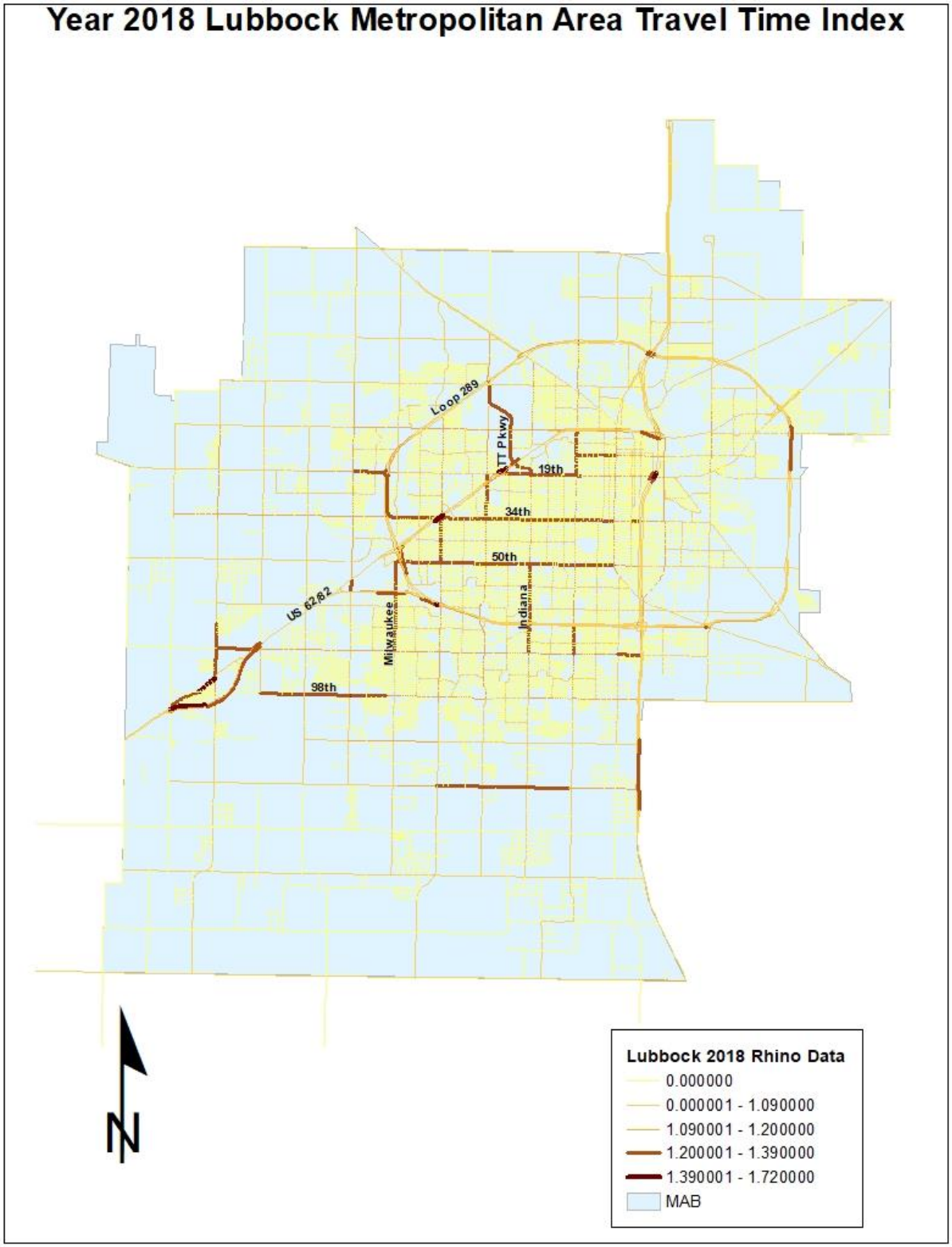
Traffic Compound Annual Growth Rate	2012 Traffic Counts	Forecasted 2032 Demand	Compound Annual Growth Rate Range 2012-2032
SL 289 near Quaker Avenue	70,000	97,700	1.7%
US 84 North near SL 289	9,300	13,000	1.7%
US 84 South near SL 289	14,700	20,600	1.7%

LMPO staff examined RHiNo data provided by TxDOT. The data had many gaps in coverage. With the addition of large road, peak period, and day time hour data, the 2012

RHiNo data filled in some of the gaps in coverage. The system-wide Compound Annual Growth Rate Range of 1.7 percent may not be accurate because one-size does not fit all:



In 2013, truck-only, 15 minute, and nightime periods, were added to the Commercial Traffic Data. In 2018, 7 day per week, additional 15 minute periods, and the top 100 roadways were added to the Commercial Traffic Data. With the additional data, the following map shows travel time stress in new areas and roadways that were not present in the 2012 example:



Because the current input data is derived from new technologies (e.g. smartphones and probe-based vehicles), LMPO staff is confident that Commercial Traffic Data will become more accurate as data points accumulate.

d. Travel Time Index (TTI) and Congestion Management Process Assessment Tool (COMPAT)

According to the Texas Transportation Institute (TTI), the purpose of the Congestion Management Process Assessment Tool (COMPAT) is to assist Metropolitan Planning Organizations (MPOs) and stakeholders with congestion management process planning and corridor study development. Specific functions are to help assemble volume and speed data from an INRIX speed data set procured by TxDOT to compute the Texas 100 Most Congested Road Sections report, and the TxDOT-maintained Roadway-Highway Inventory Network (RHiNo) data sets. COMPAT is an internet-based tool that makes RHINo data accessible to MPOs, as well as other transportation planning organizations.

The intended use of the web tool is to provide insight into the congestion management process, enabling LMPO to quickly view the congestion-related performance of various categories of roads in the Metropolitan Area. A separate function enables the ability to also select individual roadway sections in order to evaluate how the section is performing. The genesis for the analyses contained within the COMPAT web tool comes from the need to quickly visualize congestion performance based on two important volume and speed data sets:

- Volume data from the Texas Road and Highway Inventory data set (RHiNo)
- Speed data files obtained from the TxDOT-procured data associated with the TxDOT 100 Most Congested Report provided by INRIX.

With COMPAT, LMPO will be able to provide regional summaries of performance profiles and mapping based on a variety of roadway categories, and performance measures, as well as, select roadway sections across the Metropolitan Area and obtain congestion performance profiles on a selected days of the week.

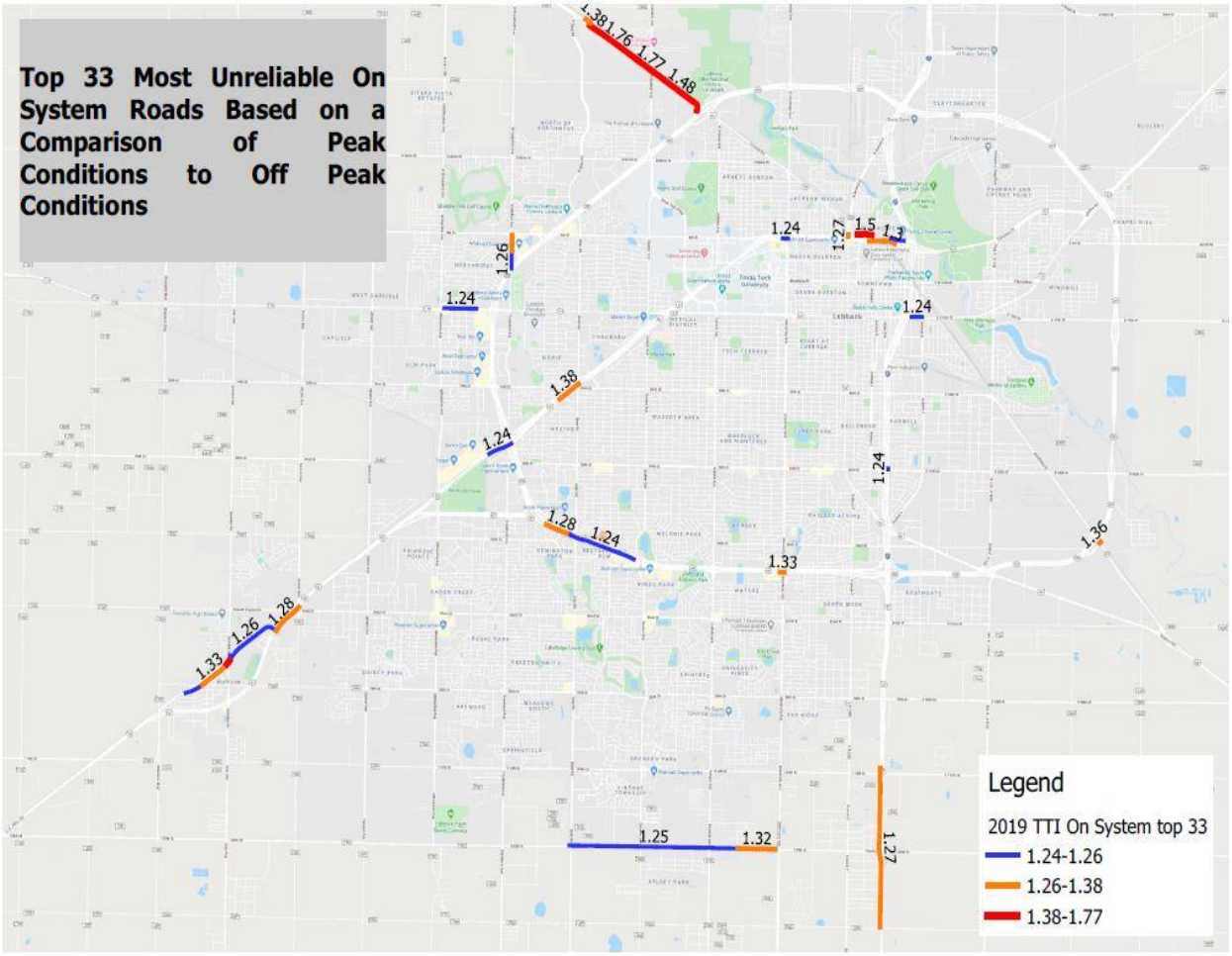
COMPAT brings these data sets together through similar segmentation methods applied to the TTI Texas 100 most congested roadways analysis. COMPAT can be accessed by visiting the following web link:

https://compat.tti.tamu.edu/

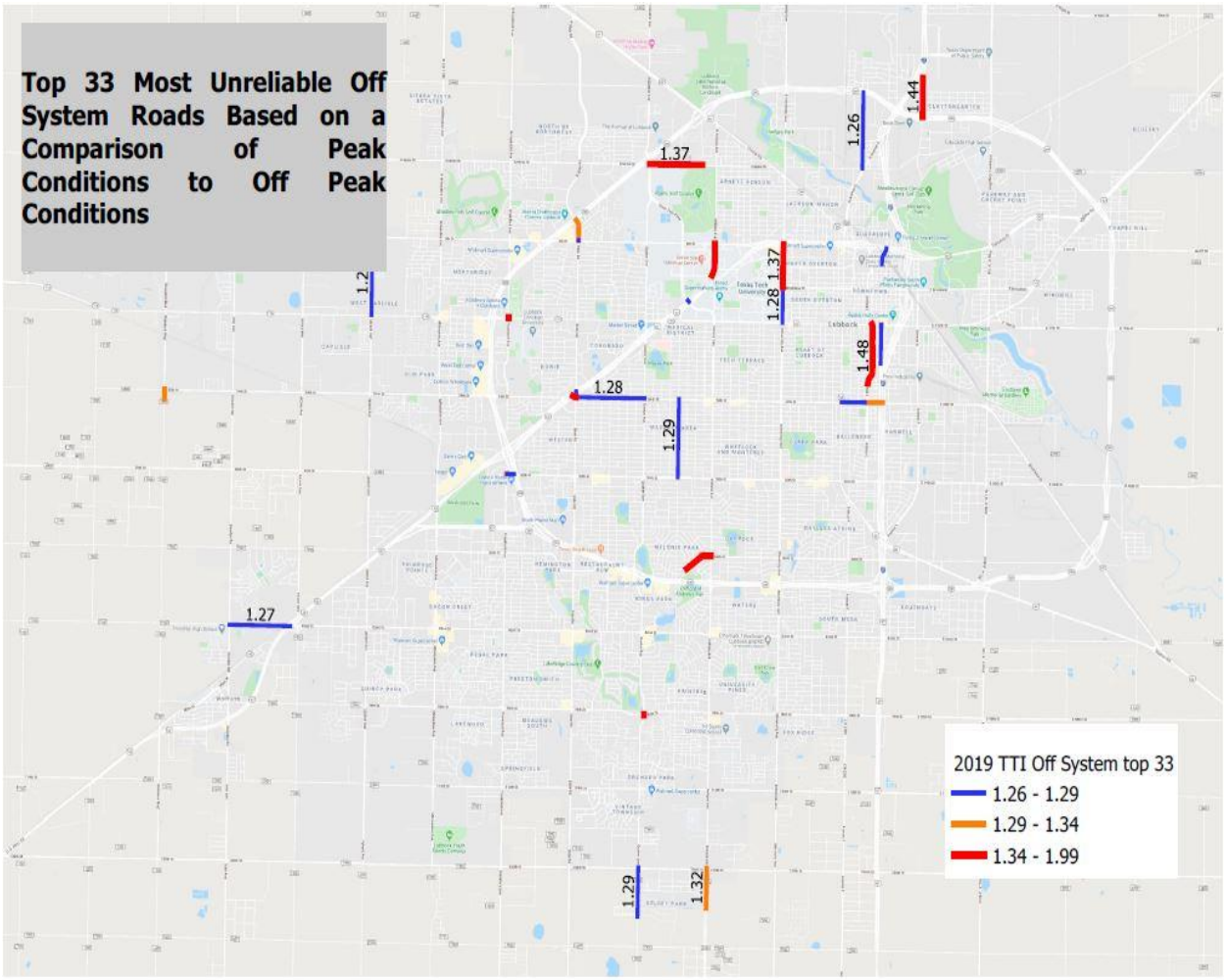
COMPAT contains the Travel Time Index as the measure for roadway travel time performance. The index is the ratio of the travel time during the peak period to the time required to make the same trip at free-flow speed. A value of 1.3 indicates a 20 minute free flow trip requiring an 6 extra minutes, or 26 minutes during the peak period. The Travel Time Index is built on nearly the same inputs as the Texas Congestion Index.

Texas Transportation Institute and LMPO staff looked at TxDOT and local system roadways to identify the Top 33 most congested roadway segments using COMPAT data. The smaller segments indicate intersection delay.

Texas Transportation Institute and LMPO staff looked at TxDOT system roadways to identify the Top 33 most congested roadway segments using COMPAT data.



Texas Transportation Institute and LMPO staff looked at local system roadways to identify the Top 33 most congested roadway segments using COMPAT data.



LMPO staff will continue analyzing Commercial Traffic Data as it becomes available.

V. Congestion Problems and Needs Analysis

a. Special Generators

In keeping with existing growth trends, other special traffic generators and activity centers like Reese Technology Center, Frenship ISD and Lubbock-Cooper ISD have been identified toward the city's southwest in response to observed growth west of US 87 and south of SH 114. Evidence of increasing population outside Loop 289 is also given by the recent development of other trip generators including the Lubbock Youth Sports Complex and several new public schools.

For LMPO's Travel Demand Model, a spreadsheet was developed that had entries for each defined special generator location (SGZ). The SGZs are treated as mathematical inputs to the LMPO TDM.

The City of Lubbock utilizes a web based GIS system that provides information to the general public. LMPO maintains a web site within the City of Lubbock's larger web site. LMPO notifies stakeholders of local events, demographics, community plans, and local economic goals through its web pages.

Lubbock's Texas Tech University currently has more than 31,000 students enrolled. Football, basketball, and baseball athletic events occur year-round. Because of TTU's enormous impact on local tourism, one representative from TTU sits on the Technical Advisory Committee of LMPO. The Lubbock Chamber of Commerce is included on LMPO's mailing list and frequently attends Transportation Committee Meetings.

Texas Tech University sports events typically require extra law enforcement to aid traffic operations. A relationship between the City of Lubbock's law enforcement, signal engineering, and Texas Tech University's campus police has existed for many years. This relationship will continue as the Texas Tech campus continues to expand.

b. Traffic Operations

The following strategies are recommended by the Institute of Traffic Engineers (ITE) for handling traffic concerns such as speeding, cut-through traffic, sight restrictions, and collisions:

- Enforcing general laws and ordinances pertaining to speed limits, intersection control, and parking regulations.
- Educating residents to better understand the causes of traffic problems, potential solutions to those problems, and the advantages / disadvantages of implementing these solutions.
- Installing Traffic Control Devices judiciously and in conformance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD) which provides standards, guidance, and options for traffic control devices on public roadways.
- Installing Traffic Calming Devices that manage the physical movement of vehicles or pedestrians within the roadway or within a neighborhood when the previous strategies have proven insufficient or ineffective.

To assure that traffic calming requests are processed consistently, fairly and timely, the subsequent steps are followed by the City of Lubbock:

1. Neighborhood representative submits application form.
2. Traffic Engineering performs a site visit and investigation within six weeks of application.
3. Neighborhood Representative works with Traffic Engineering to establish a Traffic Calming Treatment Plan and acquire citizen information for a Survey Petition. Signatures will be verified to confirm the required neighborhood support level.
4. If verified Survey Petition does not show 80% support, application is denied.
5. If verified Survey Petition shows 80% or more support, the Traffic Engineering Department will place the street or alley on a list of approved traffic calming projects, and the neighborhood representative will be advised of the approved installation request.

c. Local Traffic Signal Installation Coordination

In August, 1994, an Agreement for the Installation and Reimbursement for the Operation and Maintenance of Traffic Signals within a Municipality was entered into by the Texas Department of Transportation and the City of Lubbock. The TxDOT and COL agreement is identified as the Type R Agreement by Resolution No. 4559.

In 2018, TxDOT and COL determined that it was necessary to amend the original agreement due to the addition of three (3) Diamond Interchange Signals. The Type R Agreement was amended with the following additional traffic signal installations at the following intersections:

26.) Marsha Sharp Freeway (US 62/82) and Upland Avenue
27.) Marsha Sharp Freeway (US 62/82) and 82nd Street (Donald Preston Drive)
41.) Slaton Highway (US 84) and Martin Luther King Boulevard

The maximum amount payable under this agreement is increased from $99,160.00 to $106,660.00 per year in accordance with the above changes.

Calculations for the increase to the maximum amount payable are as follows:

AMOUNT OF THIS SUPPLEMENTAL AGREEMENT	$ 7,500.00
ORIGINAL MAXIMUM AMOUNT PAYABLE PER YEAR	$ 44,702.00
TOTAL PREVIOUS SUPPLEMENTAL AGREEMENTS	$ 99,160.00
REVISED MAXIMUM AMOUNT PAYABLE PER YEAR	$ 106,660.00

EXHIBIT 1			
Signalized intersections on frontage roads of Freeways located within the City of Lubbock, Texas & City of Wolfforth, Texas			
#	Location	Type of Signal	Unit Cost
Interstate Highway 27 frontage roads with:			
1	North Loop 289 frontage road (Westbound)	Type VI	$560
2	North Loop 289 frontage road (Eastbound)	Type VI	$560
3	Erskine Street	Type VI	$560
4	Municipal Drive	Type VI	$560
5	42nd Street	Type VI	$560
6	Avenue E and 13th Street	Type I	$2,120
7	Marsha Sharp Frontage Road (U.S. 62/82) (Southbound)	Type III	$2,500
8	Marsha Sharp Frontage Road (U.S. 62/82) (Northbound)	Type III	$2,500
9	19th Street (U.S. 62 & S.H. 114)	Type III	$2,500
10	34th Street	Type III	$2,500
11	50th Street	Type III	$2,500
12	66th Street	Type III	$2,500
13	Slaton Highway (U.S. 84) Frontage Road (Westbound) & Avenue A	Type III	$2,500
14	Slaton Highway (U.S. 84) Frontage Road (Eastbound)	Type III	$2,500
Marsha Sharp Freeway (U.S. 82) frontage roads with:			
15	Buddy Holly Avenue	Type III	$2,500
16	Avenue L	Type I	$2,120
17	Avenue Q (U.S. 84)	Type III	$2,500
18	University Avenue	Type III	$2,500
19	Texas Tech Parkway	Type III	$2,500
20	Quaker Avenue	Type III	$2,500
21	Slide Road (FM 1730)	Type III	$2,500
22	34th Street	Type III	$2,500
23	West Loop 289 Frontage Road (Northbound)	Type III	$2,500
24	West Loop 289 Frontage Road (Southbound)	Type III	$2,500
25	Milwaukee Avenue	Type III	$2,500
26	Upland Avenue	Type III	$2,500
27	82nd Street (Donald Preston Drive) [City of Wolfforth]	Type III	$2,500
North Loop 289 frontage roads with:			
27	Clovis Road (U.S. 84)	Type I	$2,120
28	Erskine Street	Type III	$2,500
29	North Quaker Avenue	Type III	$2,500
30	North Slide Road	Type III	$2,500
31	University Avenue (FM 1264)	Type III	$2,500
West Loop 289 frontage roads with:			
32	4th Street (FM 2255)	Type III	$2,500
33	19th Street (SH 114)	Type III	$2,500
34	34th Street	Type III	$2,500
35	50th Street	Type III	$2,500
36	Frankford Avenue (FM 2528)	Type III	$2,500
South Loop 289 frontage roads with:			
37	University Avenue	Type III	$2,500
38	Indiana Avenue	Type III	$2,500
39	Quaker Avenue	Type III	$2,500
40	Slide Road (FM 1730)	Type III	$2,500
Southeast Loop 289 frontage roads with:			
41	Slaton Highway (U.S. 84) and Martin Luther King, Jr. Boulevard (Northbound)	Type III	$2,500
42	Slaton Highway (U.S. 84) and Martin Luther King, Jr. Boulevard (Southbound)	Type III	$2,500
Spur 327			
43	Frankford Avenue	Type III	$2,500
44	Milwaukee Avenue	Type III	$2,500
Tahoka Highway (U.S. 87) frontage roads with:			
45	82nd Street	Type III	$2,500
46	98th Street	Type III	$2,500
		TOTAL:	**$106,660**

The City of Wolfforth has an Interlocal Agreement with the City of Lubbock for traffic signalization at 82nd Street (Donald Preston Dr) and US 62/82. The Interlocal Agreement is renewed annually.

The current The Wolfforth/COP Interlocal Agreement document is included in this document as a good illustration of the annual costs of operations and maintenance where two principal arterials intersect.

As noted in the Agreement, there is an additional signal along US 62/82 that is maintained by TxDOT:

Resolution No. 2019-R0144

THE STATE OF TEXAS	§	INTERLOCAL AGREEMENT
	§	BETWEEN CITY OF LUBBOCK
COUNTY OF LUBBOCK	§	AND CITY OF WOLFFORTH

THIS INTERLOCAL AGREEMENT is entered into on this the 23rd day of April, 2019, 2018, in accordance with Chapter 791 of the Texas Government code, by and between the City of Lubbock, Texas, a municipal corporation (hereinafter referred to as "Lubbock") and the City of Wolfforth, Texas, a municipal corporation (hereinafter referred to as "Wolfforth") each separately a "Party" and collectively the "Parties";

WHEREAS, the Parties to this Interlocal Agreement (hereinafter referred to as "Agreement") wish to cooperate in the installation, operation, and maintenance of certain traffic signal systems along Donald Preston Drive, the "Project", which would benefit both Parties; and

WHEREAS, the governing bodies of each Party find that the Project or undertaking is necessary for the benefit of the public and that each Party has the legal authority to build or maintain the Project or to provide such service, and the construction and improvement thereof is in the common interest of both Parties hereto; and that the covenants and promises constitutes adequate consideration to each Party; said Project being more particularly described below; NOW THEREFORE,

In consideration of the premises and the agreements, covenants and promises herein set forth, it is agreed as follows:

I. DEFINITIONS

The following terms shall have the following meanings when used in this Contract:

A. "Traffic Signal System" or "Project" means the installation, operation, and maintenance of traffic signal systems at the locations shown on Exhibit "A".
B. "Parties" means Lubbock and Wolfforth, Lubbock County, Texas.
C. "Project costs" are shown on Exhibit "B".
D. "Routine operation and maintenance costs" are shown on Exhibit "C".
E. "Routine operation and maintenance" includes all items and activities shown on Exhibit "D".

II. PURPOSE

The purpose of this Agreement is to provide for all functions and services required for the design, installation, and routine operations and maintenance of traffic signal systems on Donald Preston Drive at the locations shown on Exhibit "A".

III. TERMS, RIGHTS OBJECTIVES AND DUTIES OF THE PARTIES

The following shall apply to the Parties in the performance of this Agreement:

A. Wolfforth will assume all costs associated with the purchase and installation of the proposed traffic signal systems. Lubbock will purchase and install the traffic signal systems at the request of Wolfforth. An estimate of the full cost of the Project shall be provided by Lubbock. Lubbock shall bill Wolfforth at the completion of the Project, and Wolfforth shall pay Lubbock within 30 days from receipt of actual costs from Lubbock.

B. Lubbock shall be responsible for the routine operation and maintenance of the traffic signal systems after installation. Wolfforth shall reimburse Lubbock all such routine operation and maintenance costs at a fixed annual rate as set forth in Exhibit "C". Lubbock shall bill Wolfforth on an annual basis and Wolfforth shall pay Lubbock within 30 days from receipt of invoice from Lubbock.

C. Wolfforth shall be responsible for the cost of any signal modification or replacement cost due to damage caused by vehicle impact, weather, road widening, obsolescence, or in the event of an Act of God.

IV. NO VERBAL AGREEMENT

This Contract contains all the terms, commitments and covenants of the Parties pursuant to this Contract. Any verbal or written commitment not contained in this Contract or expressly referred to in this Contract and incorporated by reference shall have no force or effect.

V. AGREEMENT INTERPRETATION AND VENUE

The Parties covenant and agree that any litigation relating to this Agreement, the terms and conditions of the Agreement will be interpreted according to the laws of the State of Texas and venue shall be proper exclusively in Lubbock County, Texas.

VI. CAPTION

The captions to the various clauses of this Agreement are for informational purposes only and in no way alter the substance of the terms and conditions of this Agreement.

VII. IMMUNITY

It is expressly understood and agreed that, in the execution of this Agreement, no Party waives, nor shall be deemed hereby to waive, any immunity or defense that would otherwise be available to it against claims arising in the exercise of governmental powers and functions.

VIII. SEVERABILITY

If any of the terms, sections, subsections, sentences, clauses, phrases, provisions, covenants or conditions of the Agreement are for any reason held to be invalid, void or unenforceable, the remainder of the terms, sections, subsections, sentences, clauses, phrases, provisions, covenants or conditions in this Agreement shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

IX. NON-APPROPRIATION

All purchases by the Lubbock under this Agreement are subject to the availability of an annual appropriation for this purpose by the Lubbock. In the event of non-appropriation of funds by the City Council of the City of Lubbock for the purchases provided under the Agreement, Lubbock will terminate the Agreement, without termination charge or other liability, on the last day of the then-current fiscal year or when the appropriation made for the then-current year for the services covered by this Agreement is spent, whichever event occurs first (the "Non-Appropriation Date"). If at any time funds are not appropriated for the continuance of this Agreement, cancellation shall be accepted by Wolfforth on thirty (30) days prior written notice, but failure to give such notice shall be of no effect and Lubbock shall not be obligated under this Agreement beyond the Non-Appropriation Date.

EXHIBIT A

Traffic signal systems along Donald Preston Drive to be installed, operated, and maintained by Lubbock.

1. Cambridge Avenue
2. US 62/82*

*Separate agreement made between Lubbock and Texas Department for Transportation for routine operation and maintenance of US 62/82 signal.

EXHIBIT B

Items and associated costs to be purchased and installed by Lubbock.

Cambridge Avenue

Item	Quantity	Cost	Extended Cost
Install comm equipment and street name markers			
Labor – Technician	4	$58	$232
Add to central signal system, configure comm equipment, retime and coordinate with adjacent signals			
Labor – Engineer	4	$75	$300
New parts			
Overhead street name markers (signal arm mounted)	4	$200	$800
Total			***$1,332***

US 62/82

Item	Quantity	Cost	Extended Cost
Install new cabinet, controller, signal monitor, comm equipment, and street name markers			
Labor – Technician	40	$58	$2,320
Add to central signal system, configure comm equipment, retime and coordinate with adjacent signals			
Labor – Engineer	8	$75	$600
New parts and equipment for compatibility with Lubbock's central signal system			
CalTrans 332 cabinet and base	1	$5,146	$5,146
2070 ATC signal controller	1	$2,600	$2,600
EDI 2018KCLip signal monitor	1	$812	$812
Ruggedcom RS900 Ethernet switch	1	$1,341	$1,341
Fiber optic patch panel with pigtail	1	$623	$623
Overhead street name markers (signal arm mounted)	6	$200	$1,200
Total			***$14,642***

EXHIBIT C

Cambridge Avenue, a Type I signal at a conventional intersection shall be reimbursed at $3,010 per year.

Calculations	Labor – Engineering	$750
	Labor – Technician	$1160
	Equipment	$800
	Materials	$300
Total		***$3,010***

Annual Price Adjustment:

Use the Consumer Price Index for All Urban Consumers (CPI-U), South – Size Class B/C published by the United States Department of Labor (For Aug 2018 the Index was 153.964). The index for the annual adjustment will be two months prior to the renewal date because the Labor Department's statistics are not available until two months after the current date.

EXHIBIT D

Routine operation and maintenance provisions.

1) Perform the following every 12 months:
   a) Inspect the highway traffic signal system and replace burned out or damaged LED indications as may be required. Police, citizen, or other reports of burned out lamps or other damage, which could jeopardize safety, shall be repaired or replaced as soon as possible after the report, depending on the nature of the report. Otherwise, appropriate steps shall be taken to protect the public. All replacement LED indications shall equal the output and type of the existing lamp.

   b) Check the controllers, conflict monitors, detector units, relays, pedestrian push buttons and detectors to ascertain that they are functioning properly and make all necessary repairs and replacements.

   c) Replace the cabinet air filter.

2) Be responsible for the signal timing and operational phasing as coordinated with Wolfforth and the Texas Department of Transportation. Document routine observations during the year by trained City personnel to ensure fair distribution of time for traffic movements during the varying traffic conditions.

3) Keep signal poles and controller cabinets tight on their foundation(s) or pedestal(s).

4) Keep signal poles and arms in alignment.

5) Keep traffic and pedestrian signal heads aligned and properly adjusted. Repair back plates where required.

6) Keep interior of controller cabinets in a neat and clean condition at all times.

7) Repair or replace any and all equipment within the traffic cabinet that malfunctions or is damaged. Damage to structural elements such as signal poles, arms, and foundations are not covered in routine maintenance.

8) Provide alternate traffic control during a period of failure or when the controller must be repaired. This may be accomplished through installation of a spare controller, placing the intersection in flash, manually operating the controller, or coordinating the manual direction of traffic through the use of proper authorities.

9) Provide maintenance personnel trained in the maintenance of traffic signal equipment who will be available to respond to emergency calls from authorized parties 24 hours a day including Saturdays, Sundays, and holidays.

10) Provide the State and local law enforcement agencies the location and respective names and telephone numbers of individuals responsible for emergency maintenance.

11) Document all checks and corrective actions in a separate logbook for each intersection.

d. Traffic Signal and Intersection Monitoring

The City of Lubbock (COL) requested MPO funding for a permanent traffic counter adjacent to the South Plains Mall in order to monitor vehicular trips. COL was unable to obtain the data expected, due to software incompatibility. COL discontinued the counter's use due to the incompatibility with existing trip count methods.

In 2018, City of Lubbock's Traffic Operations Department upgraded 7 intersections with new flashing yellow arrow lights, 12 intersections had ITS Plus installed, 15 miles of fiber optic were installed, 6 existing bike lanes with signage and symbols were improved, 5 intersection had new signals installed, and speed cushions were installed along a portion of 50th Street. The City of Lubbock Year 2018 is a typical year regarding intersection installations and improvements though some years may require more installations than normal.

e. Regional Congestion Management Objectives Analysis

Based upon the TMMP studies developed by LMPO, the Lubbock Metropolitan Area contains a low to moderate degree of roadway congestion, as shown in **Chapter IV.**, **Sections a**, **b**, and **c** of this document.

LMPO staff participates in rural public transportation coordination at SPAG and local public transportation coordination at Citibus Advisory Committee Meetings.

b) LMPO's Technical Advisory Committee has representatives from the City of Lubbock Police Department and the Texas Department of Public Safety and they advise on safety issues as pertains to transportation planning. LMPO also coordinates with the City of Lubbock, SPAG, Citibus, and other local agencies regarding transportation facility development.

b) LMPO staff are voting members of the boards for South Plains Association of Governments (SPAG) and City of Lubbock public transportation provider Citibus. SPAG coordinates operation of the South Plains Rural Transit District (SPRTD). SPARTAN provides local and out-of-town public transportation services to the following 17 county area: Bailey, Lamb, Hale, Floyd, Motley, Cochran, Hockley, rural Lubbock, Crosby, Dickens, King, Yoakum, Terry, Lynn, Garza, Scurry, and Mitchell.

VI. Identify and Assess Strategies

a. Travel Demand Model

LMPO Year 2017-2045 Travel Demand Model Update

The ability of travel demand models (TDM) to forecast future year traffic and other travel behavior are predicated on their ability to estimate “known” traffic volumes and travel patterns utilizing base year conditions for which extensive data is available. The goal in developing the Lubbock Metropolitan Area’s Travel Demand Model (TDM) is to provide a means for making informed decisions regarding proposed transportation improvements. By having a valid forecasting tool, LMPO Policy, Advisory and staff have the best available data for allocating transportation monies.

Substantial time and effort are invested in developing and validating a base year model to ensure reliability of forecasted trip scenarios. The process of comparing the results of a TDM for the base year to observed or known data is referred to as validation. LMPO has archived reports that document the validation of the LMPO’s Travel Demand Model. Model validation demonstrates credibility by replicating observed conditions (e.g. traffic counts, vehicle miles of travel, or travel times).

Travel demand model validation deals with the sensitivity of the modeling outcomes with respect to the varieties of modeling assumptions, inputs, parameters, dataset, and methodologies. This validation of the Lubbock MPO TDM focuses on assessing the outputs from trip generation, trip distribution, and trip assignment. For LMPO’s Travel Demand Model, a spreadsheet was developed that had entries for each defined special generator location (SGZ). The spreadsheet is used to specify the parameter being used to estimate the special generator trips (generally the special generators employment), the basic rate used to estimate the total special generator trips, the source of the rate used for the special generator and the splits used to the estimate the special generator productions and attractions by trip purpose.

New spreadsheets were developed for upcoming forecast years and include variables such as:

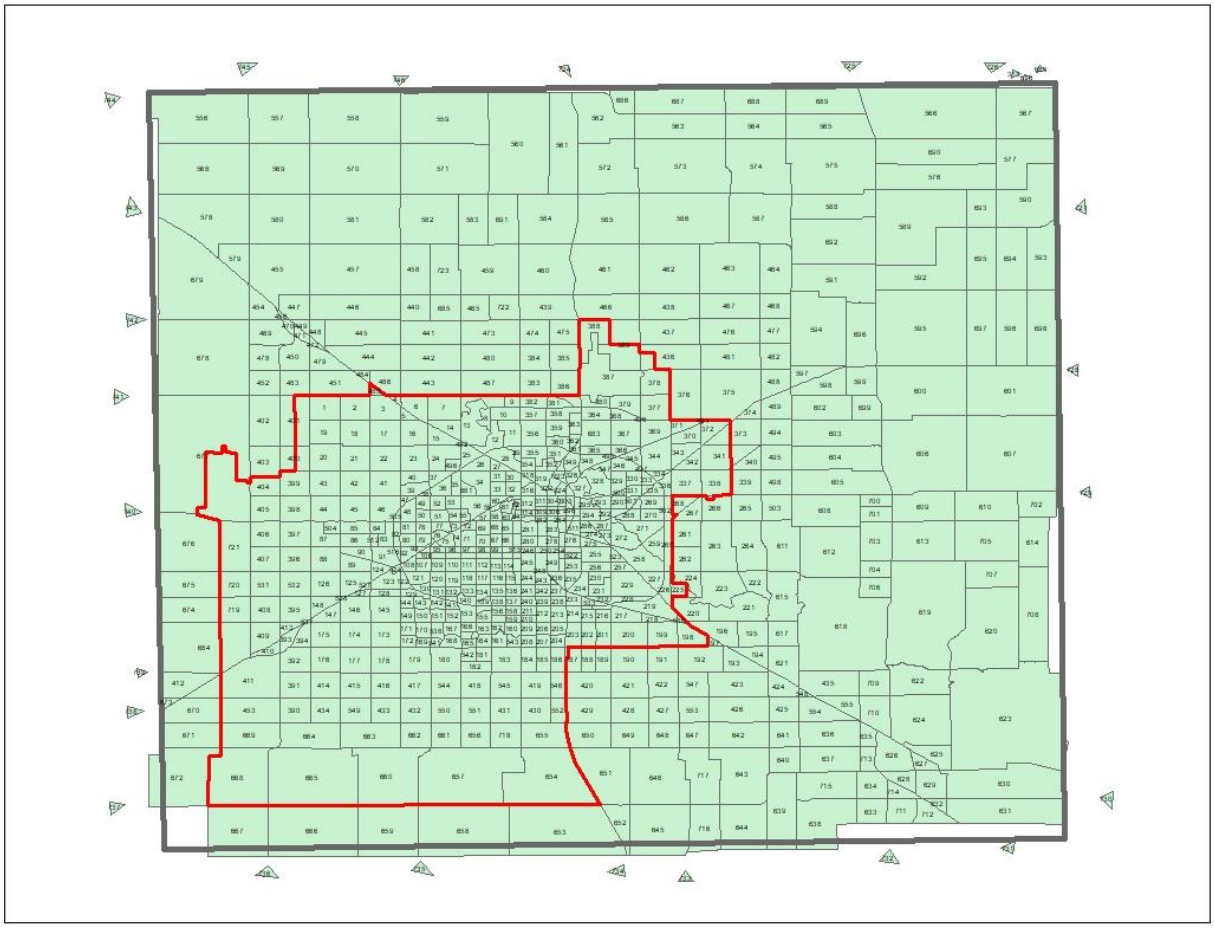
- the special generator rate being used,
- the source of the rates being used,
- the estimated splits of trip ends by trip purpose needed to apply results, and
- the demographics estimates to remove from the normal TAZ data and specific SGZ records for inclusion.

The criteria used for validation of the model were based on current TxDOT and FHWA standards, and represent reasonable measures for determining the accuracy and reliability of the model. The validation of the model described in the previous sections accomplishes two goals. First, it demonstrates that the calibration tools and assumptions used in the modeling process are reasonable. Second, the validation provides the model

users and transportation professionals with confidence that the model can be used in the MPO planning process.

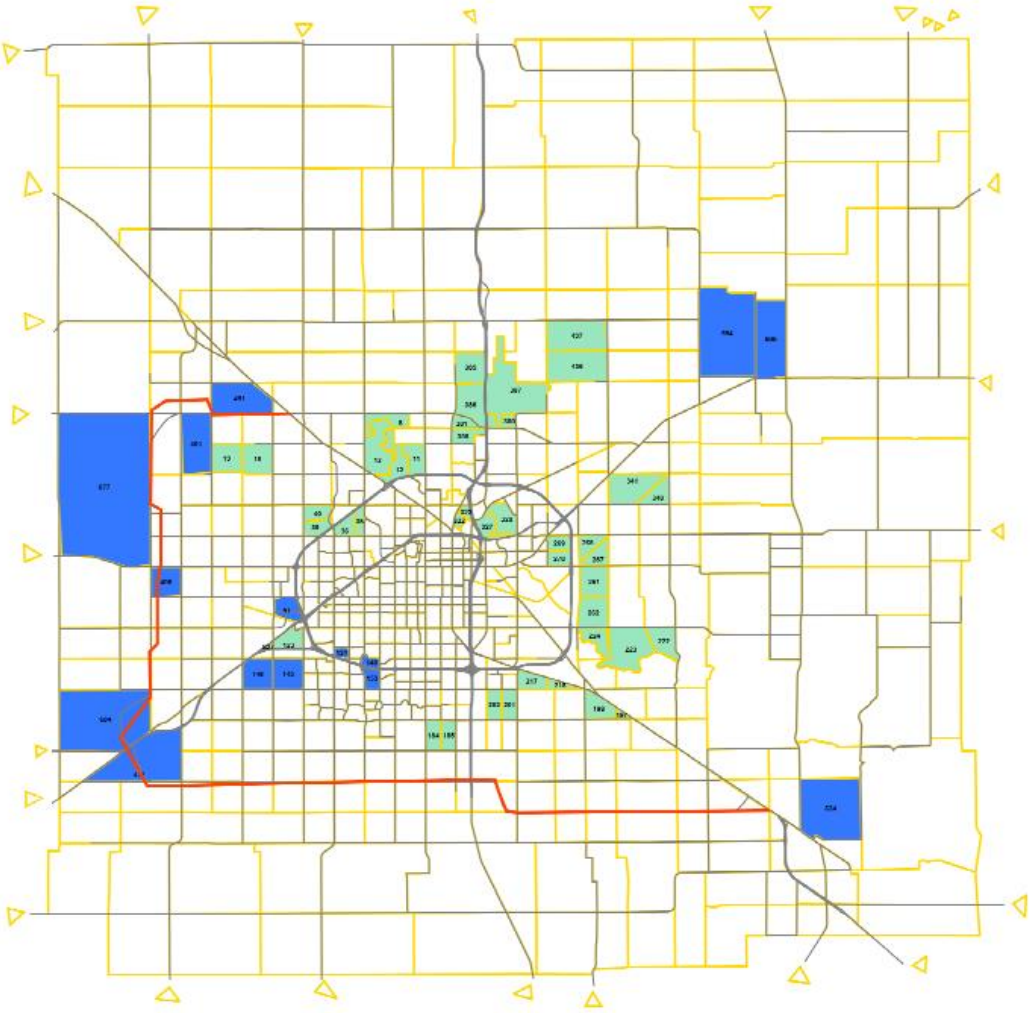
LMPO TDM Traffic Analysis Zones (TAZ)

TAZs are developed to accurately hold socioeconomic and demographic information in electronic data form that can be loaded to the digital roadway network. U.S. Census data is used as the base for the demographic and socioeconomic information in the TDM, the TAZ boundaries were drawn to be consistent with census block boundaries. Census blocks are the smallest geographical unit for which socioeconomic and demographic data is available to the public. LMPO's Year 2006 TAZs are depicted below:

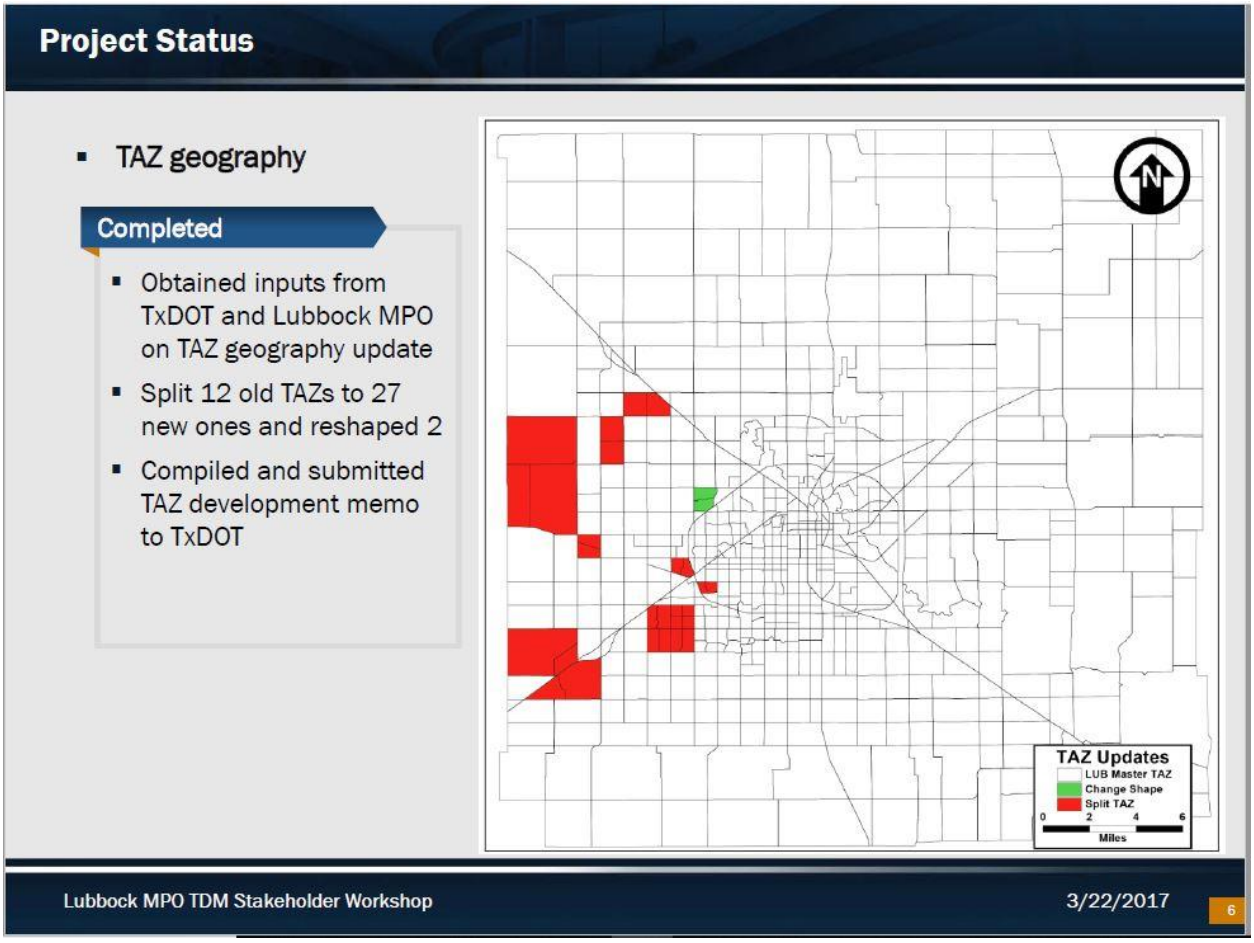


In Year 2017, TxDOT awarded the contract for the Lubbock Metropolitan Area TDM update to Alliance Transportation Group, Inc. In the beginning of the update process, Alliance proposed a TAZ modification plan. Proposed modifications were identified as 1) block groups to be split (depicted with the color turquoise), and 2) existing TAZs to be split (depicted in dark blue). The future Loop 88 alignment is depicted in red and is adjacent to and splits some larger TAZs. Alliance provided the modification plan to TxDOT and LMPO for review. After revising drafts and receiving feedback on the plan, Alliance finalized the TAZ geography.

DRAFT

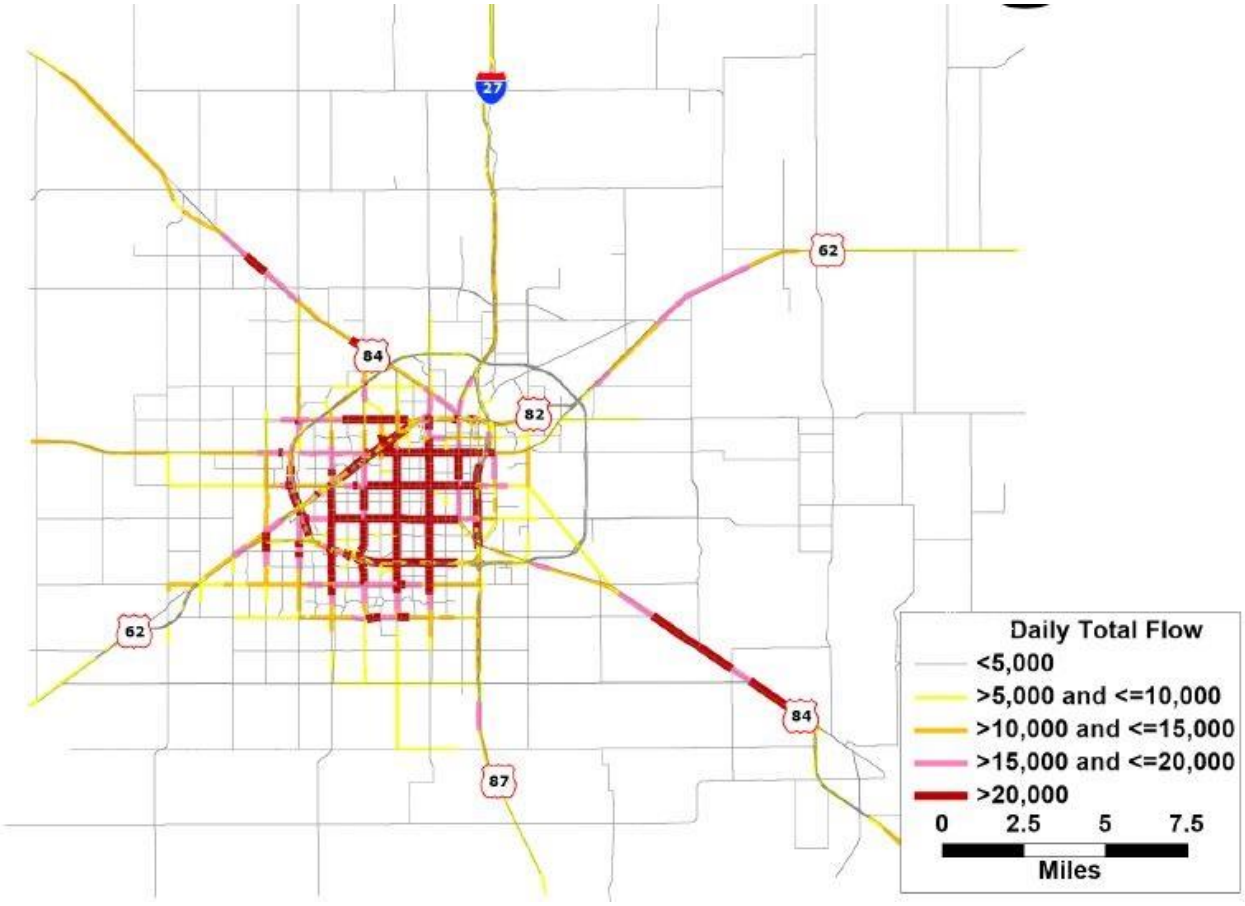


The final TAZ geography that feeds into the current Year 2017 Validated Travel Demand Model is depicted below. The 2 reshaped TAZs (depicted in green) are based on North Slide Road's final configuration. The larger TAZs that were split will provide greater detail when assigning trips to future Southwest Lubbock Metropolitan Area roadways.



Base Year 2017

LMPO's Travel Demand Model was validated upon Base Year 2017. Traffic flow volumes, as generated by data collected for the LMPO TDM, are depicted in below. The heaviest volumes are depicted in red and lesser volumes in yellow:



Care was taken with each step of TDM development to ensure that the LMPO TDM maintained a high level of predictive value in comparison to observed data. The calibration and refinement of the TDM was performed in a comprehensive and systemic manner guided by current modeling practice and TxDOT suggested guidelines. All changes made to the TDM were also applied uniformly and consistently across the entire model. After the validation process was complete, the resulting model provides a realistic and reliable predictor of the magnitude and pattern of future travel in the Lubbock MPO area. The TDM should serve as a useful and informative tool for performing travel forecasts and analyses of proposed transportation projects.

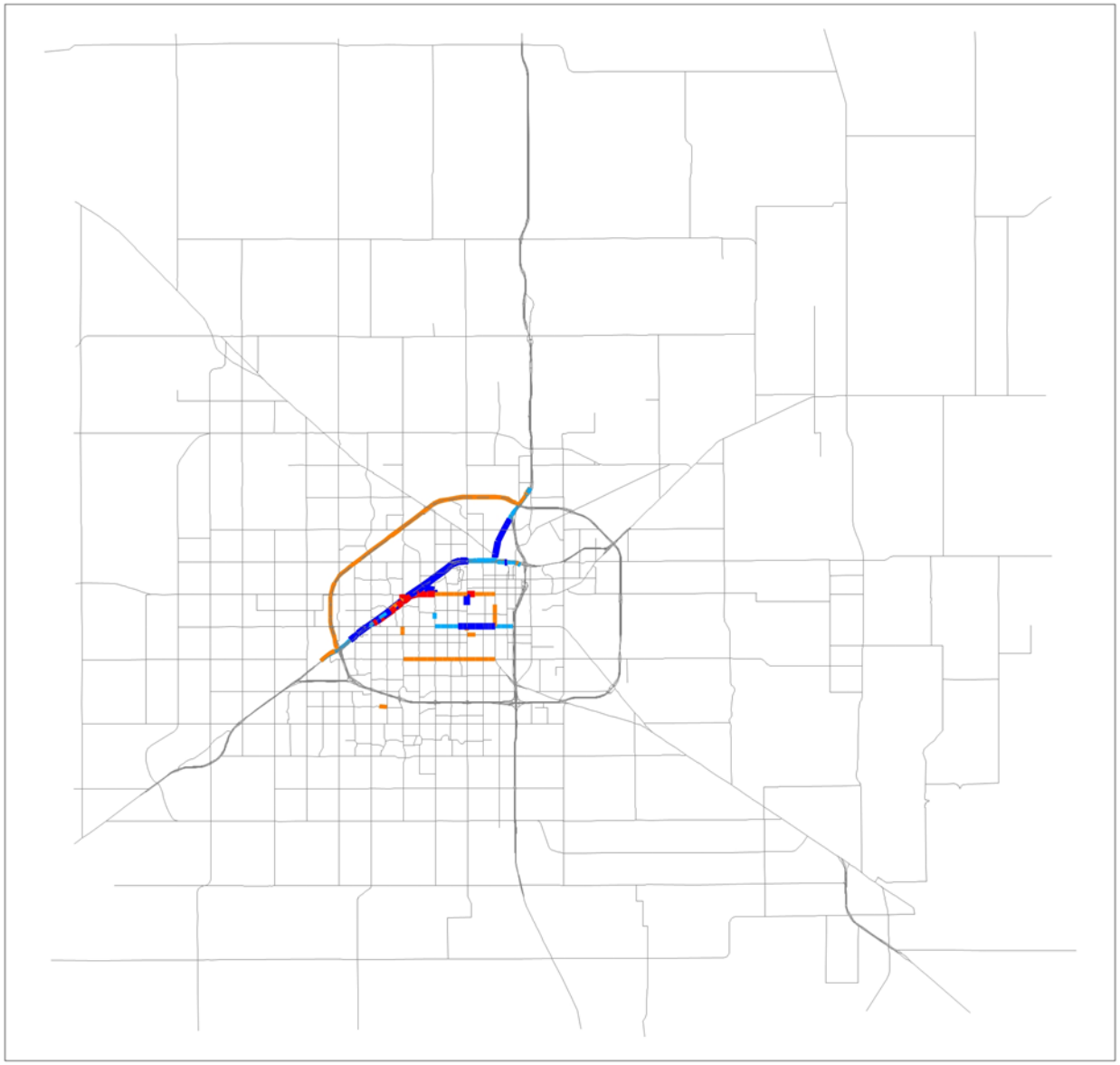
2045 Stress Test

Based on the contract between TxDOT and Alliance, the contract stipulated that Alliance conduct runs designed to represent a stress test of the system. These tests included full execution of all models that comprise the TDM and included network modifications designed to represent a new roadway and the modification of demographics. The results were documented. The documentation, provided by Alliance, includes step-by-step instruction to repeat the exercise.

In the scenario depicted on the next page, the total number of lanes on Marsha Sharp Freeway were changed from 6 to 4. The total number of trips generated were reviewed and confirmed to be the same total generated in the original 2045 Scenario. A traffic assignment was generated using the 4 lanes.

Assignment volumes were compared to original Year 2045 volumes. The scale of volume changes is demonstrated in the color chart in the legend. The Marsha Sharp Freeway lane reduction scenario produced 5% to 10% volume reduction in different segments, and also resulted in some trips seeking new routes as congestion and travel times increased on Marsha Sharp Freeway. The test scenario demonstrates that the 2017-2045 TDM produces logical responses to capacity/accessibility changes.

The largest volume reduction occurred within the portion of Marsha Sharp Freeway between North University Avenue and Slide Road, and the portion of North Avenue Q which connects IH 27 and Marsha Sharp Freeway. Modeled volumes on the remaining portion of Marsha Sharp Freeway also experienced reductions in volume. Additionally, modeled volumes on several roadways parallel to Marsha Sharp Freeway increased due to the rerouting of trips (e.g. for instance Loop 289 and Marsha Sharp Freeway frontage roads). Trip lengths for each trip purpose remained stable despite the reduction of lanes on the Marsha Sharp Freeway.



Lubbock MPO

Travel Demand Model

Volumn Change

- -10000 to -1000
- -1000 to -500
- -500 to 500
- 500 to 1000
- 1000 to 10000

0 2.5 5 7.5

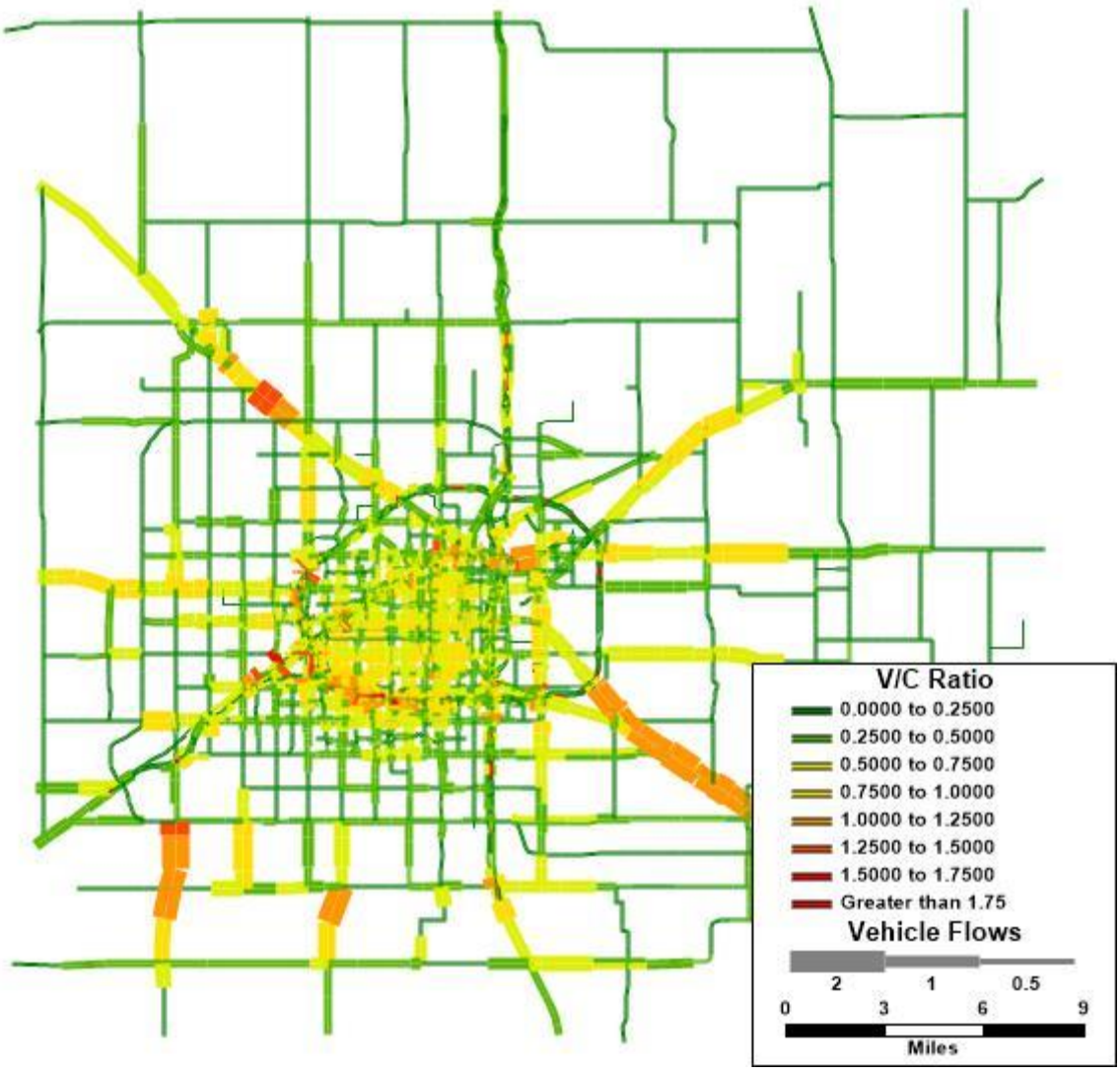
Miles

Year 2045 Projected Traffic Volumes vs Capacity

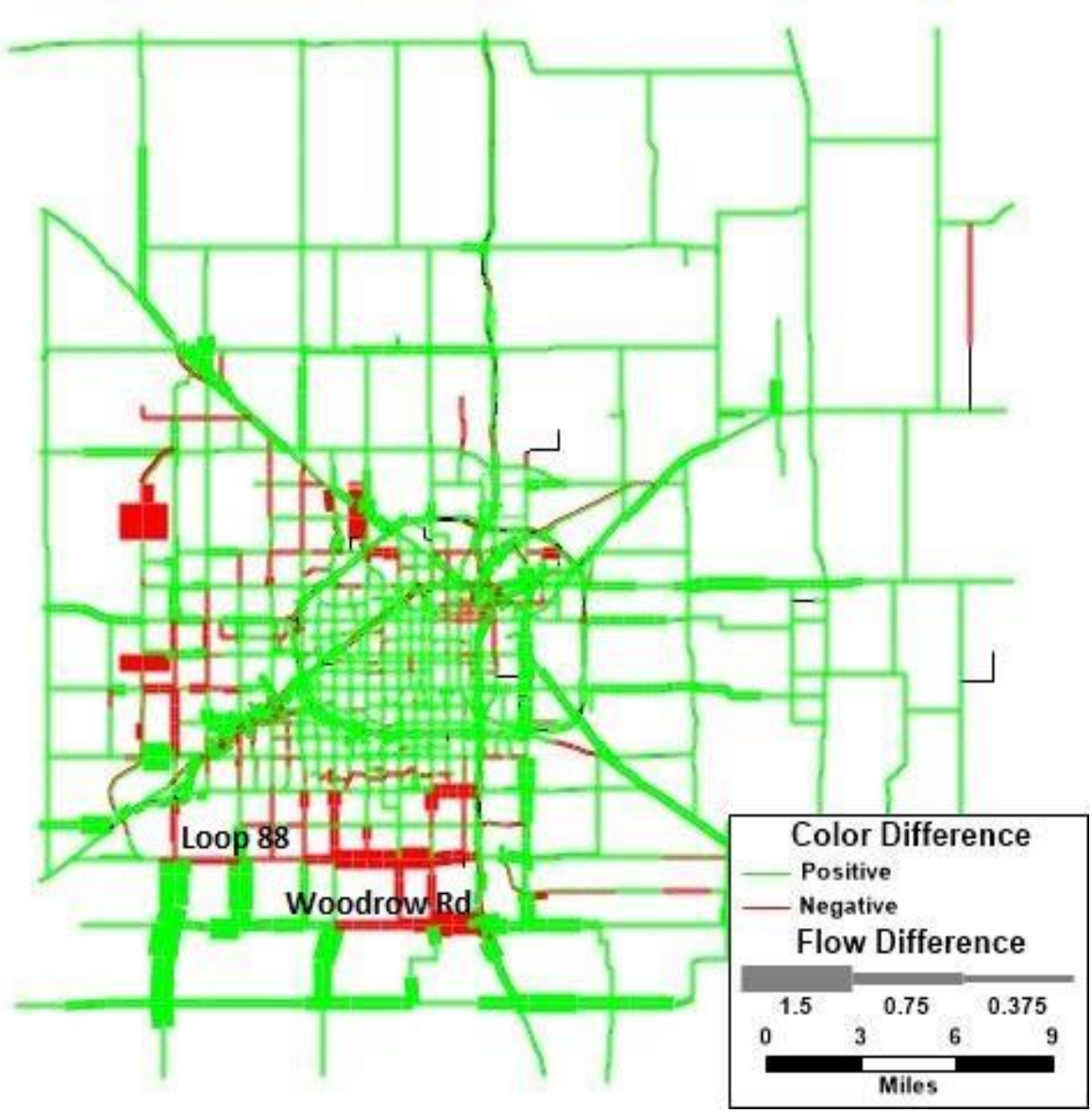
Projected volume to roadway capacity, as generated by the Year 2045 Lubbock Metropolitan Area TDM, are depicted on the next page. Roadway portions in red and orange represent heavier volumes. Green colored roadways indicate freer flowing vehicular movement.

The V/C Ratio, as depicted in the legend on the following page, is Volume to Capacity or volume divided by capacity. Those portions of roadway depicted as orange or red indicate that that portion of roadway will have more vehicle trips than the recommended carrying capacity and may become problematic (i.e. congested).

Year 2045 Volume to Capacity



LMPO staff took the Year 2017-2045 TDM and created a scenario where Base Year 2017 total trip output is subtracted from Projected Year 2045 total trip output. The red flow bands represent the magnitude of decline in trips when 2017 base year conditions are subtracted from year 2045 projected trips. The TDM demonstrates substantial loss of trip volume along Woodrow Rd and Loop 88 corridors. By reducing capacity along Loop 88 and Woodrow Rd will divert to other routes. Without the proposed improvements along Loop 88 and Woodrow Road, vehicle trips will divert to other available roadways.



In the above, Loop 88 and Woodrow Rd are depicted in a no-build scenario. Increased population and housing development along these two corridors demonstrate a potential for congestion if current roadway conditions persist into the 2045 forecast year. Relief to potential roadway congestion along these corridors may be achieved by adding capacity within the corridor.

Travel demand models continue to evolve as analysis needs and policy objectives change. For this reason, the LMPO TDM was designed to be a flexible dynamic tool that could evolve and grow along with the needs of the Lubbock Metropolitan Area. As implemented, the model is a complete set of planning tools capable of performing the required transportation systems planning analyses, as well as providing inputs for traffic reduction strategies, policy and economic analysis, and evaluation of alternative infrastructure investments. The model will assist the Lubbock MPO and TxDOT in consistently carrying out required transportation system planning activities, and with performing implementation scenario analyses for the Lubbock area.

b. Traffic Signal Optimization

Maintaining a state-of-the-art traffic signalization system achieves two of the goals of this document. 1) Properly timed signalization reduces delay by minimizing stop-and-go traffic flow. 2) Properly timed signalization improves the operation of the Lubbock Metropolitan Area's roadway system. Commuters and commercial vehicle operators are able to depend on safer and less time-consuming travel.

Most traffic signals in Lubbock spaced closer than one mile from the next signal are coordinated. Coordination reduces delay and stops for arterial traffic. Factors such as varying speeds, signal spacing, heavy left turn movements, and crossing arterials reduce the effectiveness of signal coordination. Coordination is most effective where signals are strategically installed allowing traffic to move at a consistent speed.

Traffic signal coordination aims to reduce delay and stops. Techniques include lead/lag left turn phasing, phase re-service, and half cycles are used to overcome the above mentioned various speeds, spacing, left turns, and arterial crossings.

Each time a coordinated arterial crosses another coordinated arterial, four approaches must be considered. This results in compromise to reduce delay along the most traveled routes with the highest traffic volumes. Though there is a compromise to balance a major arterial intersection, overall travel times are still reduced with traffic signal coordination.

The Lubbock Metropolitan Area relies on various technologies (e.g. computer hardware and software, fiber optic cable, remote sensing equipment, etc.) to maintain traffic signal coordination. This requires adequate levels of funding and will remain a priority for LMPO and its member agencies.

VII. Congestion Management Process Program and Implementation Strategies

a. Project Selection Criteria and Project Prioritization

MAP-21 ushered in a new era of accountability, requiring greater attention and transparency in transportation planning. The Fixing America's Surface Transportation Act (FAST) Act continued accountability and transparency by requiring a performance-based approach to evaluate asset conditions, safety, and service quality. LMPO staff commenced to create a more comprehensive project selection process, based on MAP-21 and FAST Act criteria.

LMPO's Transportation Policy Committee approved new Project Selection Criteria both in early 2017 and 2018. The approved project selection criteria were used in the approval process of the new 10 Year Plan and Year 2019-2022 Transportation Improvement Program (TIP) projects. LMPO's Project Selection Criteria Evaluation Form is compliant with new planning processes mandated by the FAST Act that became effective across the nation on December 4, 2015. LMPO's Project Selection Criteria Evaluation Form is currently in use and is depicted on the following page:

Lubbock Metropolitan Planning Organization
Overall Project Selection Criteria-Evaluation Form

02/02/2018

Project Name / Location: | **TxDOT CSJ:** | **LMPO No.:**

Limits from:

Limits to:

Eligible Project Category: | **Federal Functional Classification:**

Description of work and purpose:

Project Length (miles): | **Est. Construction Cost:**
Proposed Funding breakdown: | **Est. Engineering Cost:**
%Federal: | **Est. Utility Cost:**
% State: | **Est. Right-of-Way Cost:**
% Local: | **Est Total Cost:**
Major Adjacent Land Use:
Accident history:
Congestion Level: **Current:** **V/C Ratio:** **LOS:**
Projected: **V/C Ratio:** **LOS:**

MPO Project Evaluation:

Does the project provide any of the Following benefits: Single item no more than 50 Group total no more than 300	Points: (1-50)	Does the project provide any of the Following benefits: Single item no more than 25 Group total no more than 150	Points: (1-25)
Does Project increase area Safety and Security?		Does Project negatively affect the natural environment?	
Does Project avoid delivery delays?		Does Project increase the value of transportation assets?	
Does Project provide alternative mode capacity: e.g. transit, bicycle access, and sidewalks		Does Project have regional significance?	
Does Project increase local economic development opportunities or impact any adopted plans or policies?		Does Project maintain TxDOT, FHWA, and FTA planning goals?	
Does Project reduce roadway congestion and promote travel time efficiency?		Does Project respond to Congestion Management Process goals?	
Does project improve or maintain roadway network condition?		Does Project improve National Highway Freight network?	

Project Readiness (1-50 points):

Required Match Commitment (1-50 points):

Does Project improve existing transportation facilities operations, management, and maintenance (1-25 points):

Environmental Justice Impact (1-25 points):

Comments:		**TAC Adjustment:**	**TPC Adjustment:**
Date of Review:		**Total Points 600 limit:**	

Decision Lens

Decision Lens is a software company that has been serving State and Local Governments since 2006. The Decision Lens software helps DOTs prioritize assets such as budgets, programs, systems, or capabilities, and allocate finite resources against them. TxDOT recently purchased Decision Lens for their districts and all 25 MPO's to aid in project selection processes. The FAST Act continues the accountability and transparency of MAP-21. The Decision Lens will provide a rating criteria for mobility project selection as performance metric tool as specified in the FAST Act.

Decision Lens equips local agencies with data insights needed to prioritize high value projects and defend long or short range investment decisions. By breaking down proposed projects into cost versus benefits, LMPO and the Lubbock District may:

- perform analysis of budget and resource allocation scenarios to reduce long-term investment costs,

- collaborate on trade-offs between strategic and operational outcomes to increase confidence in selection decisions, and,

- increase transparency and achieve true performance-based planning for better outcomes.

TxDOT staff recently proposed to the LMPO TPC the use of Decision Lens. LMPO and TxDOT Lubbock District staff are currently developing a Lubbock Area specific version of the Decision Lens for Project Selection Criteria using the Evaluation Form from the previous page of this document. Thus far, the Technical Advisory Committee and the Transportation Policy Committee have each received a live demonstration of how the proposed tool should perform. Both Committees viewed the proposed tool favorably. The tool would provide visualization (e.g. charts and diagrams), individual input (with minimal training), and uniformity to the project scoring process.

LMPO staff will be monitoring the progress of this data driven planning tool.

b. Corridor and Project Studies

Loop 289 Ramp Reversal Study

The first part of the study regarding congestion for Loop 289 was completed in 2007. The study analyzed the level of service regarding the traffic volume in 2007 and modeled the following alternatives to the interchange designs:

1. Keeping the existing ramp configurations, add an auxiliary lane to the outside main lane between the entrance and exit ramps on the roadway segment between:

    - Slide Avenue and Quaker Avenue
    - Quaker Avenue and Indiana Avenue
    - Indiana Avenue and University Avenue and
    - University Avenue and I-27.

2. Convert the ramp configuration from diamond interchanges to X patterns along South Loop 289, both east and west bound between:

    - Quaker Avenue and Indiana Avenue
    - Indiana Avenue and University Avenue and
    - University Avenue and I-27

Depending on the simulation results, add a third lane on the frontage road connecting the exit and entrance ramps.

3. Alternative (2) with an additional auxiliary lane on the main lanes going over the bridges.

This Phase II study was conducted based on the Phase I study recommendation and particularly focused on the impact of the ramp reversal strategy on frontage roads and intersections. The study mainly addressed the evaluation of the level of service on the frontage roads and intersections on the area of interest. It also identified best practices for frontage road and intersection operation while implementing ramp modification projects.

Loop 88 Study

TxDOT began the process of developing an “Outer Route” in 2010. TxDOT used the following steps to begin the process of outer route development:

- Feasibility Study
- Route Study
- Design and Environmental Studies
- Right-of-Way Acquisition
- Utility Adjustments
- Construction

Prior to current Lubbock Outer Route, Loop 88, development, transportation demand needs were assessed using LMPO’s Travel Demand Model. TxDOT’s study contractor prepared an Outer Route scenario using anticipated population growth, roadway dimensions, and best case scenario for alignment.

The LMPO TDM identified a regional increase of 3.4 million vehicle miles of travel (VMT) per day from the base year of 2006 to the forecast year of 2040. This represented a 56% increase in VMT during a 34-year period. A considerable part of this increase was in the southwest portion of Lubbock, where the Lubbock Outer Route was proposed.

The Feasibility Study determined if there was a need for an Outer Route around the City of Lubbock from US 84 northwest of Lubbock to US 84 southeast of Lubbock. The Feasibility Study considered alternative corridors. If feasibility was determined, the next step proposes that a route study be initiated. The Route Study would further investigate and refine alternative corridors and identify the preferred routes.

Through the feasibility study process, alternative corridors and a preferred viable corridor were identified. A facility type, along with a phasing concept and implementation plan, was also identified. The results of the Feasibility Study provided a first step in preserving a future transportation corridor in Lubbock County that will minimize impacts to the human and natural environment, as well as, minimize costs associated with the development of a future transportation facility.

The development of corridor alternatives for the Lubbock Outer Route was undertaken using a stepwise interdisciplinary approach and "fatal flaw analysis". Constraints, or limitations to corridor development, were mapped to assist in the development of initial half-mile wide preliminary alternative corridors. Environmental and engineering information was used in the development of alternatives and in the analysis of potential environmental impacts. This information was developed by acquiring and consolidating information from a variety of sources including public involvement meetings, file information from the Texas Department of Transportation (TxDOT), other state agencies,

the City of Lubbock, the City of Wolfforth, Lubbock County, LMPO, public input, and field reconnaissance. As a result of extensive review of available information, a number of key environmental and engineering issues were identified and considered in alternative development and selection of the Preferred Corridor.

The environmental review, consultation and other actions required by applicable federal laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated Dec. 16, 2014, and executed by FHWA and TxDOT.

LMPO currently has 6 phases of Loop 88 scheduled for funding and construction on the FY 2019-2029 Ten Year Transportation Plan. The 6 phases, or portions, are contiguous and demonstrate ever increasing vehicular volume on the Travel Demand Model.

Marsha Sharp Freeway

The Lubbock Metropolitan Area TDM was used to analyze the need for the Marsha Sharp Freeway prior to initial construction that began in 2004-2005. Though the entire MSF project from IH-27 to .5 mi West of Wolfforth City Limits was projected to take over twenty years (due to funding), the final phase was completed in 2018 and was helped along with local matching funds. The MSF provides freeway movement and congestion relief along the hospital district and Texas Tech corridors.

VIII. Evaluate Strategy Effectiveness

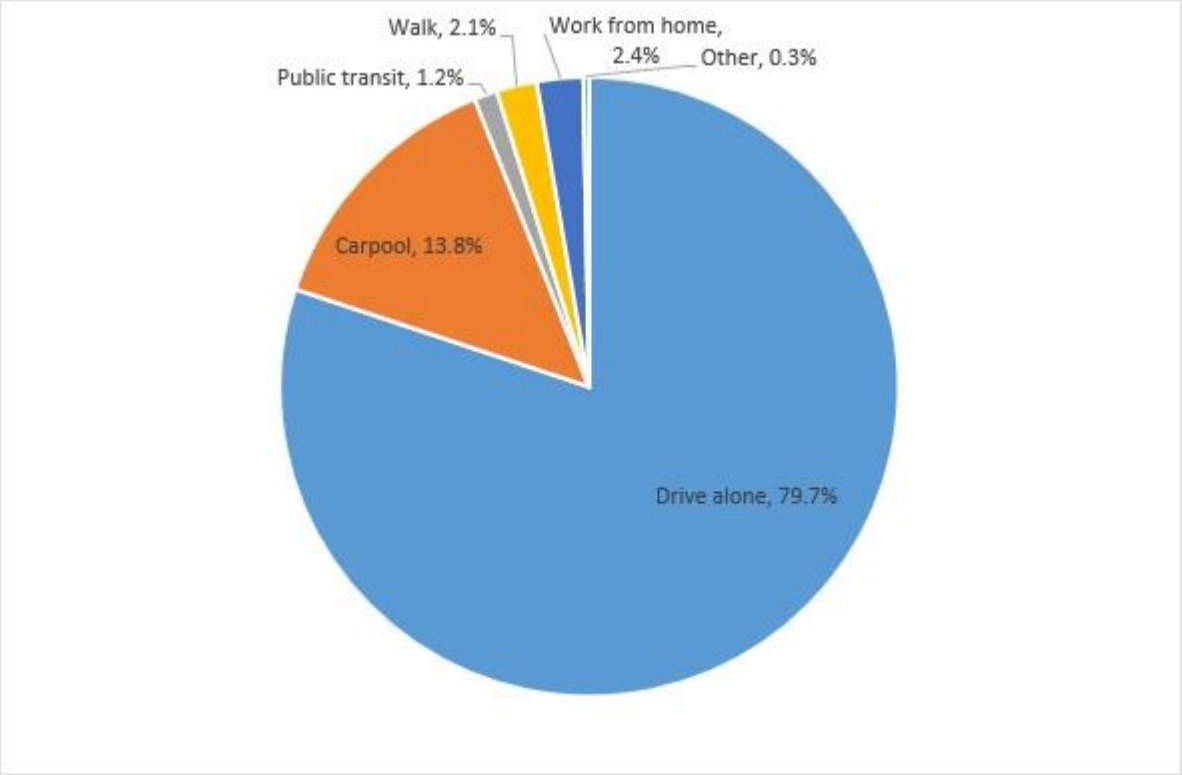
a. System Level Performance Evaluation (TDM)

Transportation Demand Management (TDM) strategies are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. To accomplish these types of changes, TDM programs must rely on incentives or disincentives to make these shifts in behavior attraction. The primary purpose of TDM is to reduce the number of vehicles using the road system while providing many mobility options to those who want to travel.

Carpools and Vanpools

Regional and corporate-sponsored vanpools, carpools, and rideshare communities give commuters a way to increase occupancy. Carpools and vanpools are useful when the transit service is not reaching the sparsely populated area or does not have enough resources to increase the service area. For places without such services, online rideshare communities can serve a similar purpose.

TTI provides nationwide analysis of severity of roadway congestion. TTI provided the following snapshot of how commuters in Lubbock County travel to and from work. Approximately eight of ten Lubbock commuters drive alone to work each day.



Source: 2015 American Community Survey 1-Year Estimates, Commuting Characteristics by Sex

Public and Private Transit

The use of transit service has been a great help in reducing congestion in most urban areas. Transit, including bus pools and shuttles only, can be utilized when there is a

demand and SOV travel and other TDM strategies are not able to provide service to alleviate congestion.

Non-motorized travel

In 1994, LMPO engaged a consultant to prepare a comprehensive bicycle plan to address the national bicycle and pedestrian goals set out by the requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA). LMPO staff started the search for a consultant to update to the comprehensive bike plan by refining them to reflect local priorities and realities in 2017.

Bicycling and walking are very useful in mixed land use development. These modes reduce congestion and air pollution. According to TxDOT crash data, between January, 2012 and December, 2017, there were 651 reported crashes involving bicyclists and/or pedestrians.

We want to bring that initiative forward into the 21st century and address goals, priorities, and performance measures for the current bicycle and pedestrian modal segment with the overall goal being to have a bicycle and pedestrian master plan that establishes a safe, accessible, comprehensive and seamless bicycle and pedestrian network that is consistent with the Metropolitan Transportation Plan and in sufficient detail to be implemented through the Transportation Improvement Plan process. The master plan will assist in identifying priorities, projects, and activities to improve bicycle and pedestrian safety and mobility.

The 2018 Lubbock Metropolitan Area Walk and Bike Plan will create a unified and integrated regional bicycle and pedestrian system that connects people of all ages and abilities to desired destinations and encourages them to walk or bike for transportation or recreational purposes in a safe manner.

The planning process adopted a three part strategy to achieve three objectives. One, the plan identifies how all future transportation investments in the Lubbock metropolitan planning area can include appropriate facilities to promote bicycling and walking in a safe environment. Second, the plan identifies how the existing infrastructure can be modified to improve opportunities for bicycling and walking and make them safer. Third, the plan identifies performance measures to create a basis for which bicycling and walking facilities and safety can be properly evaluated to ensure the goals are being met.

In pursuit of the three plan strategies, existing facilities, their conditions, and their needs were assessed. Best practices and policy were identified and included in the plan from resource and reference document review.

The source of funding for the Plan was the Lubbock Metropolitan Planning Organization and the City of Lubbock. The budget for the project was included in LMPO's FY 2016/2017 Unified Planning Work Program for $200,000. That funding source was Surface Transportation Program/Metro Mobility funding and carried with it all the required stipulations and nuances associated with federal funding. The City of Lubbock joins with the LMPO by contributing $50,000 in local funding. There was no contingency relief in the funding structure allocated for the project and no change orders were accommodated.

The final document was approved in the spring of 2019 and is available for viewing at LMPO's website.

Parking Management

A parking management program is any plan by which a parking space is provided, controlled, regulated, or restricted in any manner. Communities around the United States have adopted parking policies to improve environmental quality, transportation mode shifts, or access preservation.

High Occupancy Vehicle Lanes (HOV)

A high-occupancy vehicle lane (also known as an HOV lane, carpool lane, diamond lane, or transit lane) is a restricted traffic lane reserved for the exclusive use of vehicles with a driver and one or more passengers, including vanpools, carpools, and transit buses. These restrictions may be imposed during peak travel times or periods of heavy congestion.

Minimum vehicle occupancy is 2 or more occupants. Many jurisdictions exempt other vehicles such as motorcycles, charter buses, emergency, law enforcement vehicles, or even low-emission and electric vehicles or single-occupancy vehicles choose to pay a toll. HOV lanes are normally created to increase average vehicle occupancy and persons traveling with the goal of reducing traffic congestion and air pollution. Their effectiveness is subject to debate.

Road Pricing

A price on using a highway or roadway facility forces the users to use another mode of transportation or use an alternative route.

New Highways

When necessary, new highways are constructed to relieve congestion by routing traffic from an existing system that is congested and contributing to air pollution. The Marsha Sharp Freeway began in 2005 and all phases to the project were complete, as of 2018.

TxDOT plans to construct Loop 88 by converting existing rural roadways to an access-controlled six-lane divided freeway with frontage roads and ramps. The proposed project is an added capacity roadway project with a proposed right-of-way (ROW) width of 400 feet.

TxDOT is currently programming phased projects for the southerly portion of Loop 88, as well as, conducting public hearings and meetings for the proposed alignment for the northwestern portion.

Alternative Work Hours Programs

Compressed Work Weeks in which employees work a full 40-hour in fewer than the typical five days and Flexible Work Schedule that shifts work start and end times to off- peak hours of the day help relieve congestion.

Financial Incentives

Preferential parking for persons sharing carpools and vanpools, subsidies for transit riders, transportation allowances, preferential access and egress to parking lots, periodic prize drawings for carpool and vanpool members, and guaranteed ride home programs help reduce traffic and congestion.

b. Strategy Effectiveness Evaluation

The Technical Advisory Committee and the MPO Staff, will meet periodically to evaluate CMS strategies and suggest changes, when needed.

Congestion management requires traffic count data. The city, county, and the Texas Department of Transportation collect this data routinely in their jurisdictions for traffic operation. Additional data needs will be addressed as needed. LMPO coordinates data collection activity and provides assistance where needed.

The Technical Advisory Committee analyzes the data collected from all the local agencies to check the transportation system performance. The TAC will then recommend any necessary plan or action to the Transportation Policy Committee (TPC). The TPC decides what action is feasible and which agency is responsible for implementing the action plan to alleviate congestion in the MPO area.